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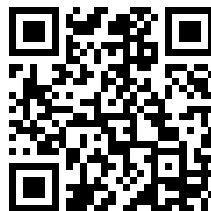
SAW & KNIFE FITTING
MACHINERY.

Baldwin, Tuthill
& Bolton.
GRAND RAPIDS, MICH.
U.S.A.

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1873—1904



Automatic and Hand Feed Shingle Box Board and Heading Machinery

MODERN METHODS

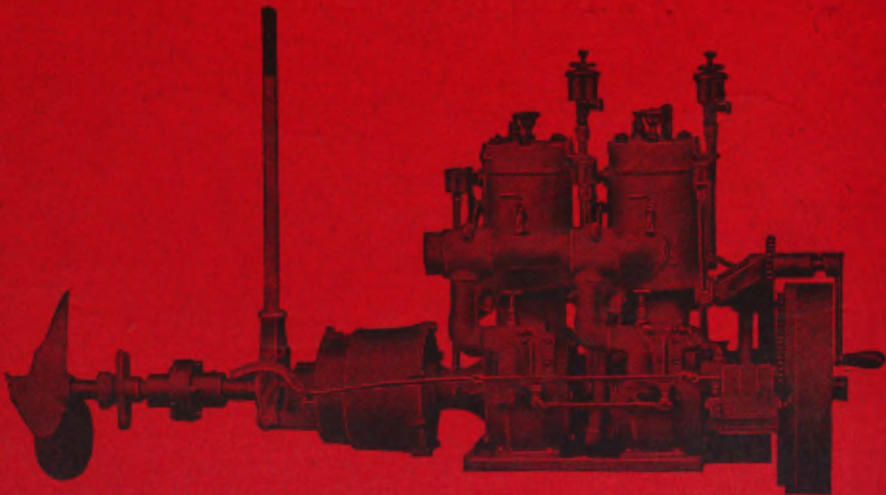
Steam and Friction Feed Cutting Off Machinery



COMPLETE EQUIPMENTS A
SPECIALTY

SEND FOR FULL CATALOGUE

LAUNCH AND ENGINE DEPARTMENT



Passenger, Speed and Pleasure Launches, Marine Gasoline
Engines, 2 and 4 Cycle—1½ to 40 Horse Power

PERKINS & COMPANY

GRAND RAPIDS, MICH.

B. T. & B.

Saw and Knife Fitting Machinery
and Tools

MACHINERY FOR

Saw Mills and Woodworking Plants

A BOOK FOR MILL MANAGERS, SUPERINTENDENTS,
FOREMEN AND SAW FILERS

BALDWIN, TUTHILL & BOLTON,

GRAND RAPIDS, MICHIGAN,
U. S. A.

SECOND EDITION, 1904
10,000 COPIES

We manufacture and catalogue the most extensive line of Filing Room Appliances produced in the world, and include a considerable number of new machines and tools recently developed.

Our equipment consists of the most modern tools and appliances, and our system of jigs and templets, the use of skilled labor, and the construction of our machines in lots, enable us to put the very best value into them, with respect to material, workmanship and finish, and to furnish them at prices fairly competitive, comparative quality and efficiency duly considered. We are not manufacturing distinctly cheap machinery, and shall not attempt to offer low prices at the expense of good mechanical construction and efficiency. Our observation and experience demonstrate that saw fitting machinery cannot be made too well, and the customer who looks mainly to the matter of price is very short-sighted.

Standards in Filing Room Machinery have been lower as regards general construction, adjustments and efficiency, than in other classes of sawmill or factory equipment, and the manufacturer whose ideal has been to produce machinery "just as good as any other" has placed no tax upon his energies. If every buyer measured the purchase by comparative cost price only, as some unquestionably do, there would be little encouragement for us to establish for ourselves a high standard of construction; but the far-sighted manufacturer who appreciates the far-reaching effects of perfect saw-fitting, and that machines of high standard are essential thereto, or whose losses, manifestly due to poor saw-fitting and poor saw-fitting machinery, appeal directly to his purse, is demanding the machinery that is "not just as good as any other," but that is unquestionably better than any other.

A machine tool construction and finish is what we aim at. Our workmanship is of the best quality; sliding surfaces are hand scraped to a bearing; all gears are automatically cut; all screws and worms are machine made of steel or brass; all nuts, screws, idlers, etc., having severe service are case hardened or tempered; all small machines and tools and adjusting parts are nicked. Each machine is adjusted and operated so far as may be in line with customer's requirements, as evidenced by templets of teeth furnished with order, and is carefully skidded, crated or boxed, as may be necessary for shipment. The illustrations and descriptions of our machinery can hardly fail to please the most critical buyer, but more than upon these we rely upon our machinery itself, extensively in use in the mills and factories, often tried, rarely denied, and ready to be tried again.

From those interested in the use or purchase of Saw and Knife Fitting Equipment, we invite a personal inspection of our shop methods and our manufactured product, at factory or in the mills, as may be most convenient, and also a careful examination of the testimonial letters which we include in this book.

We now have many thousands of customers for our various machines and many hundreds of testimonial letters, only a few of which we take space to publish, as briefly indicative of the esteem in which our manufacture is held. Our claims of merit in our machines are based directly on our own knowledge and the experience of our customers.

The rapid development of our line from a single machine to two hundred or more different specialties for the care of saws, has been due to the actual requirement for something better, of customers who appreciate the importance of running finely fitted saws, the superiority of machine over hand fitting, and the advantages of having a machine or tool for each and every service. As new requirements present themselves, we shall always be ready to meet them.

We desire to thank all customers for their past patronage and shall base our claims

for further orders solely on our ability to be progressive and to furnish Saw and Knife Fitting Equipment unapproached in genuine intrinsic value and service.

We recognize the fact that the practical daily user of a machine or tool has opportunities of discovering improvements or suggesting modifications that are rarely possible to the mechanical draughtsman or machine builder, and we are always thankful for any suggestions that are calculated to improve the mechanism or operation of our machinery and invite all practical men to co-operate with us in the furtherance of this end.

Special attention is called to our advertisements of other manufacturers who cater to the lumber trade.

PRACTICAL HINTS ON FREIGHT RATES, WEIGHTS AND OCEAN TONNAGE.

Our machinery for shipment by all-rail lines will be furnished without charge for skidding, crating or boxing. Machinery for export via water lines will be carefully packed and boxed as required to secure safe transit. Goods regularly furnished free on board cars at Grand Rapids and all prepayments of freight or express or mail matter to secure delivery at prepay stations or export points in the United States or Canada will be charged net cash in invoice. We give approximate weights and floor space from which the cubic measurements of our important machines may be estimated. Actual or approximate rates of freight to any regular shipping point will be quoted on application. We will secure when possible, through bills of lading for our foreign customers, routing shipment by the most advantageous lines.

We ship our machinery to every part of the United States and Canada, and are making many export shipments to foreign countries, including England, Scotland, Sweden, Russia, Germany, France, Holland, Belgium, South Africa, Peru, Uruguay, Chili, Australia, New Zealand, Tasmania, Mexico, etc. We understand export requirements. We solicit inquiries and orders from abroad and guarantee them our best attention. Always give full particulars about saws, and send outline of saw teeth.

MANNER OF SHIPMENT.

Do not fail to give complete shipping instructions with each order, comprising address, town, county and state, name of postoffice if different from shipping station, and whether you want the shipment to come by freight, express or registered mail. Give preferred freight route, and if station is a prepaid point, so state. This applies especially to new lines of railway or newly established stations. In the absence of specific instructions, our usual practice is to ship machines, tools or supplies exceeding 25 lbs. weight by freight; if less than 25 lbs. weight, by express. Articles of 4 lbs. or less in weight may be sent by registered mail at cost of 1 cent per oz., and 8 cents additional for registration. Articles by mail are at buyer's risk. We furnish equipment in good working and shipping order and our delivery ends with the receipt from transportation company. In case of damage, overcharge or delay in transit, the purchaser's recourse is upon the transportation company.

Equipment boxed for export and furnished f. o. b. cars New York, will advance 5, 10 or 15 or more per cent in price list, according to cost of such boxing and delivery, unless an advanced export price list is given specifically with domestic price list.

Goods shipped to us for repairs, exchange or otherwise, must be plainly marked with shipper's name and address and specific instructions must be sent at time of shipment.

152037

TERMS

Catalogue prices are for equipment in shipping order free on cars at our factory and all sales to parties in approved credit are made subject to payment within 30 days after date of invoice. To parties unknown or unrated, our terms are cash in full with order, except that orders for shipment by express C. O. D. or by freight with Bill of Lading attached to sight draft will have attention if order is accompanied by an amount proposed by us sufficient to guarantee the express or freight charges both ways. But in the case of small orders it is always preferable to remit cash in full with order and thus avoid the necessity of opening a new account. Time accounts not paid for on maturity will be drawn for at sight.

We make no free deliveries of goods either by mail, freight or express unless a delivered price is quoted. No deduction from our charges for prepayment, or special discounts, will be allowed.

Price lists are subject to change without notice, although we shall give the greatest possible publicity to changes as made from time to time, and in case of recent advances notify the consumer before accepting the order.

We reserve the right to correct stenographic or typographical errors in correspondence or price lists.

Repair orders must give templates or exact measurements of parts required or other information necessary to a correct understanding of the requirement. The name of the tool, with style or size number and shop number, if any, should be given.

MACHINES ON "TRIAL."

In general, we do not solicit orders for machines on trial, for the reason that we have abundantly demonstrated during many years of manufacture that our machines will do good work and give lasting satisfaction if properly adjusted and handled. We will not assume responsibility or loss arising from the ignorance, lack of skill or prejudice of an operator. If a customer who is doubtful of his need for or the adaptation of the machine to his requirement, wishes to order a machine on a 10-day trial basis, expressly agreeing that in case of non-acceptance he will return the machine promptly after the trial, in good order, prepaid, and pay us for clean-up, new belting or emery wheel, as required to put the machine in perfect order, without material loss to us, the order will have consideration.

It is our wish to avoid the shipment of anything not likely to prove acceptable.

POINTERS ON SHARPENER EQUIPMENT.

Our Band Saw Sharpeners are built right or left hand, and the sharpener should always be ordered in hand to suit the saw in use, for in such case the saw will surround sharpener and take up less floor space than if supported in front of sharpener. If both right and left hand saws are in use, we can, when so ordered, equip any of our sharpeners for both right and left hand saws, as listed. The usual practice is to support the saw on a set of adjustable post brackets and to equip the machine with two pawls, one at rear and the other out in front of the sharpener. Another method is to support the saw on a set of adjustable pulleys, suitable in size for the saws to be sharpened, having these pulleys arranged to shift either in line with machine or to a position in front of sharpener for opposite hand of saw.

The double feed and post bracket system that we furnish with our band sharpener comprises, in addition to the feed pawl on machine, a back feed pawl at rear of machine and from 4 to 6 post brackets, adjustable vertically and fitted with a hardened V roller for supporting the back edge of the saw. Sharpeners that are for use on both right and left hand saws have, in addition to the above, a suitable floor shaft, sprocket wheels and link belt for operating a third feed pawl in front of sharpener, together with the post brackets necessary to support the saw properly in front of sharpener.

In the case of machines ordered equipped with double feed and post brackets, it is a convenience when fitting up the saws as in the process of swaging, sidedressing, etc., to have an idle pulley mounted at one end of saw as a means for drawing the saw around.

The attention of factory operators of band rips or resaws not exceeding 6 inches wide, is specially called to our No. 3D, 3F and 3G combination band and circular sharpener, this being a machine that is coming to be very popular by reason of its varied adaptation and low price, as compared with the cost of two separate sharpeners, one for bands and one for circulars.

TELEGRAPHIC CODE**ORDERS.**

Bait	Answer by wire.
Back	See our letter of.
Ballot	Ship by express as soon as possible.
Barn	Ship by mail as soon as possible.
Baron	Ship by freight as soon as possible.
Barrel	Trace shipment.
Band	Enter order for.
Baboon	Quote price on.
Baker	Have your salesman call on us.
Bent	Prepare to ship, but wait instructions by mail.
Bin	Wait further instructions before shipping order of.
Bird	Send us your latest catalogue.
Boat	Hold, subject to our order.
Board	Send what you can of order at once. Let balance follow.
Boast	Answer by letter.
Bond	Ship by express, C. O. D.
Bun	Ship by freight and draw with bill of lading attached.
Bust	Send us shipping directions for.

QUESTIONS.

Bacon	How soon can you ship?
Arson	Why don't you answer our letter?
Madcap	Have you in stock.....?
Magician	At what price and how can you ship?
Magistrate	What is your lowest net price for?
Mainland	Have you shipped?
Manager	What is the best freight from Gd. Rapids to..... on?
Material	Shall we enter your order at once?
Melody	When did you ship?
Memory	By what route did you ship?
Mercury	Shall we ship?

ANSWERS.

Nabob	We have in stock and can ship at once.
Nonplus	We can ship in.....days after receipt of order.
North	We shipped your order on the.....
Northward	We will deliver on board cars here for.....dollars.
Notion	We will deliver on board cars at.....for.....dollars.
Nourish	We will ship in a few days.
Novel	We cannot promise to ship before.....
Nullify	Your order is ready for shipment, but we are waiting shipping instructions from you.
Nurture	Your telegram received.
Nymph	Your letter received.
Obelisk	Rate of freight from Grand Rapids to.....in less than carload lots on.....is
Octagon	We will ship with bill of lading attached.
Ocean	We will draw on you at one day's sight for.....dollars.

(Code words for machines and tools will be found with specifications for some.)

Important Notice to Customers

Your order or inquiry should state explicitly the precise goods you want or about which you inquire. Use code words where possible. Give shipping and mailing directions in detail and indicate preferred route. This last is particularly important with regard to shipments to new and out of the way places. Your inquiry should contain full specifications regarding details that affect your introduction or use of our machinery. Attention to this will save delay, expense annoyance and unnecessary correspondence.

SPECIFICATIONS FOR SHARPENERS, SWAGES, SHAPERS, SIDEDRESSERS, ETC.

Owing to the varied use to which saw-fitting machines are placed in different mills, it is of the utmost importance that your order for each machine should be accompanied with fullest details as to the saws on which you will use it.

In ordering SAW SHARPENERS, make a tracing of teeth from the different saws on which machine is to be used. Orders for SWAGES should show a templet of several teeth, with gauge of saws, amount of swage desired, and whether a short or long corner is desired. Orders for SHAPERS or SIDEDRESSERS should show templet of teeth, gauge of saws and amount of swage desired after sidedressing. Orders for FILING CLAMPS for gang saws should give width of saws and length between tabs, and, if possible, orders for gang sharpeners should be accompanied with a saw, which will be returned with machine. Orders for RETOOTHERS should have templet of style of throat wanted, as we make the dies of special shape to suit requirement. Each of our own make of machines requiring same is belted and supplied with one emery wheel of proper size. It is advantageous for customer to order with each emery machine a quantity of wheels suitable for the machine to go in the same shipment. We solicit emery wheel orders.

If we can have specific information, as suggested above, we can adapt our machines very closely to the individual requirement, before shipment is made, so that machine will be ready to operate without special adjustment. Orders for circular sharpeners should give templet of about ten teeth, with diameter and size of mandrel hole of all saws to be fitted on the machine. If our machines require any special modifications or attachments, we can furnish them more readily and exactly before than we can after shipment.

WHAT YOU SHOULD ALWAYS DO.

If you are going to buy any special machines or tools, or a complete filing room outfit, give us specifications and get our quotations on what you require.

If you want new machines, we have them.

If you want machines of other make, we can furnish them.

Catalogues or any desired information in detail may be had by persons interested in our equipment, upon request.

Plans for filing rooms will be furnished our customers if desired.

FOREIGN CUSTOMERS.

To sawmillers and woodworkers out of the United States, who are desirous of becoming informed with regard to the special adaptation of our saw-fitting machinery to their individual requirements, which are various in the different countries, we desire to state that we will be pleased to receive your inquiries, giving all details respecting the dimensions and uses of your saws, and we will promptly advise which of our machines are best adapted to your needs, or will make you quotation on special machinery suited thereto.

Foreign correspondents are requested to be very particular in addressing correspondence to us, and also in giving their own full mailing address in detail, to secure prompt delivery of mail without delay in transit, or miscarriage.

What Constitutes a Complete Filing Room Outfit

(COMPARE YOUR OUTFIT WITH THE FOLLOWING:)

Successful saw-fitting requires two essentials—a well equipped filing room and a capable saw filer in charge of it. Saws do not run or fit themselves, and they require fine fitting to produce a maximum quantity and improved quality of output on a minimum saw kerf. Hence, it is usually an unwise economy that does not provide both essentials, and the most successful sawmill and factory operators consider it good practice to supply every machine or tool calculated to improve or facilitate the filer's work.

Every operator of a sawmill or woodworking plant has a substantial investment in mill and saws. His profits depend largely upon having his lumber or finished product well manufactured on a maximum output and a minimum saw kerf. He spends money for saws which for some operators last for years until worn out; for others, last for weeks until worthless from cracks or other defective conditions.

There are some operators whose saws run finely; others whose saws run indifferently well or poorly, on an irresponsible wave line, because of poor swaging, sharpening, sidedressing, irregular tensioning, etc. This is a suggestion of no swage, no sharpener, no shaper, no stretcher; or, if such tools are in use they are defective, out of repair and not uniform or efficient in operation. As a result, the buyer may take the stock for a dollar or more less per thousand feet than market prices.

This suggests that the filing room is the initial point for profits in the use of saws. The purchase of filing room equipment is variously approached by different operators. One can observe all manner of ideas on the subject, ranging from those of the man in whose mind is predominant this proposition: "I want just as few and cheap machines as my filer can possibly get along with. I want him to work and earn his money by continuous hard labor—what have you second-hand, cheap?" to those of the man who says: "I want the best saw-fitting outfit obtainable—a machine and tool for every service; everything must be up to date, if not ahead of date."

A proper conservatism in buying is always judicious, and it is manifestly true that not all mill men have the same purchasing power, or can afford to be similarly equipped, or can carry on their business with equal success and profit, but it is a self-evident truth to the well informed that the best results from saws are contingent upon fine swaging, sharpening, sidedressing, tensioning and brazing; results obtainable only from the use of high-grade, efficient saw-fitting appliances in the hands of a capable operator. The life of saw-fitting machinery depends directly on the quality and strength of construction, and on the care bestowed by the operator. Defective construction and lack of proper care account for the number of sharpeners, stretchers, swages, brazing clamps, etc., in the mills today in disuse or unsatisfactory use.

The ideas of millmen and filers differ as to what machines and tools comprise an efficient Filing Room outfit, but as manufacturers of such equipment, familiar with the possibilities in the way of a machine or tool for every service, we enumerate below the several appliances that are found in practice to be necessary or desirable for the several processes of sharpening, swaging, sidedressing, jointing, leveling, tensioning, retoothing, shearing, lap-making, brazing, patching, etc. This list contemplates an outfit that will please the most critical and provides a machine or tool for every service so far as conceived to date—our own manufacture. It is an elastic list that will accommodate itself to the requirements of the most or the least critical or liberal buyers. It may be observed that there are "degrees" in filing room outfits, the "positive degree" applying to the outfit that includes only the absolutely indispensable machines; the "comparative degree" to that outfit which includes in general a fair assortment, fully up to the equipment of the average operator; the "superlative degree" to that outfit which includes a machine or tool for every service, each the best obtainable, and the whole calculated to secure the greatest efficiency in mill operation, as a result of the perfect fitting of the saws. The practical millman or filer can profitably compare his own outfit in use with the list below and note his comparative efficiency. A few hundred dollars more or less is the measurement in money between the "positive" and the "superlative" degree in filing room equipment, the saving in investment cost at 7 per cent ranging from \$15 to \$50 a year. There are millmen who are saving this difference in first cost and fixed investment, and who are losing thousands of dollars annually in poorly manufactured lumber, ruined saws, and expense for labor idle while the mill waits on the saw-fitting. There are millmen who spend from \$10,000 to \$50,000 on a plant, critical to a degree in everything that pertains to the heavy machinery, power plant, belting and saws, who fail to maintain the same high standard of excellence in the saw-fitting department, regardless of the fact that a magnificent power plant, and the rapid handling of logs by steam, and their manufacture by the most modern mills, cannot compensate for poor saw-fitting.

A Log Band Saw Filing Room Outfit**FOR SHARPENING.**

An automatic sharpener of suitable capacity, equipped with double feed finger device and post brackets for support of saw, and with idle pulley for use in fitting up work. This system does not contemplate the support of saw to sharpener on a set of adjustable pulleys, the use of which for this purpose has been largely discarded, owing to the fact that they are not found to afford the most accurate feed.

FOR SWAGING.

An automatic power or hand swage, either of which may on occasion be supplemented by the use of an upset swage or a swage bar. A grasshopper type of swage is desirable in any filing room, and a power swage also, unless the teeth cannot be maintained of fairly even length.

FOR SIDEDRESSING.

A swage shaper or pressure sidedressing tool is now generally regarded as indispensable, as its use secures the ideal tooth. A file sidedresser may also prove useful, but for regular use it is not highly recommended.

FOR LEVELING AND TENSIONING.

A doghead and a crossface hammer, weighing from 2 to 3 lbs. An iron leveling block, face 14x72 inches or smaller, surfaced both sides to permit of reversing. A steel faced anvil, 12x16 or smaller. A concave back gauge from 6 to 10 feet long for testing the back of saw. A straight edge and tension gauge of proper lengths. A saw stretcher of abundant power, with rolls properly crowned that track and travel to gether. Perfect efficiency in this machine is of the utmost importance, and a machine lacking in the particulars mentioned is inferior, as its work may have to be undone. If there is much shearing of saws, the stretcher should be equipped with a rotary shear, a feature of our geared machines.

FOR SHEARING.

A combination shearing and crosscutting machine that may be used either to shear the back or toothed edge of saw, or to cut saw in two, preparatory to lap-making.

FOR RETOOTHING.

A retoother with dies made specially to suit the special requirements. This machine may also have combined with it dies for shearing. Additional sets of dies for special requirements are often of advantage.

FOR LAP-MAKING.

A lap grinder or a lap cutter. As between an efficient machine of either type there is little to choose; either of our machines prove satisfactory.

FOR BRAZING.

A powerful brazing clamp that will insure uniform pressure across the entire surface of the lap. A machine for this service cannot be too heavy and powerful. A forge for heating the irons. The ordinary open hearth portable forge may be used for the purpose, but a special forge with tuyeres, arranged to secure a uniform heating of the irons their entire length, is more efficient. Good silver solder, Brazine, etc.

FOR FITTING UP.

An iron filing clamp with planed jaws of proper length. A set of adjustable pulleys for support of saw is convenient, but not necessary, if saw is fitted in connection with sharpener, and an idle pulley is in place for use in pulling saw around. A File Joiner. An Emery Wheel Dresser. Instruction book on hammering.

FOR CHECKING CRACKS.

A crack drill or prick punch may be used for checking small cracks. But the use of our Patch Machine for preparing the surface of a cracked saw, ready for repairing by means of the application of a patch, is highly desirable.

FOR POWER.

An engine for driving the filing room machinery, independent of the mill machinery, to afford a steady, independent power at any time, is highly desirable.

Add to the above good saws and emery wheels and a capable saw filer and the successful fitting of the saws will be assured.

A Band Resaw Filing Room Outfit

Band resaws in general use vary from 2 to 8 inches wide and from 16 to 24 gauge, and differ from the log band saw only in size. Compared with log bands, resaws require as great or even greater care and skill in fitting, because of the thinner gauges employed and the desirability of perfectly converting valuable lumber into proper thicknesses without waste.

The attempt to fit resaws without a suitable equipment of machines and tools is not economical, because of the waste in stock, poor manufacture involving extra care and labor on the part of those that work up the stuff into manufactured form, and the loss arising from breakage and destruction of saws. The greater need of suitable appliances is also evident from the fact that many of the filers called upon to take care of band resaws are men of little or no previous experience on such saws, and hence whatever is calculated to facilitate and improve their work is not only desirable but also essential.

Our outfits as regularly furnished comprise the following: (1) Automatic Sharpener, equipped with double feed finger device and post brackets for support of saw, with an idle pulley for use in fitting up work. (2) A stretcher for tensioning. (3) A Grasshopper Swage, with a small upset for occasional use. (4) A Swage Shaper for side-dressing, which is indispensable to the best results, although some make use of a file side-dresser. (5) A Brazing Clamp. (6) A Filing Clamp. (7) A Jointer. (8) A Steel Faced Anvil, 6x10 or larger. (9) A leveling block, 8x48, surfaced both sides. (10) A pair of 2 to 2½-lb. resaw hammers. (11) A set of resaw Straight Edges and Tension Gauges. (12) For those who make their own saws or have much shearing or retoothing to do, a Retoother and Shear. (13) A Lap Cutter and Lap Grinder, if many brazes are necessary. (14) A forge of suitable character for heating the brazing irons, Silver Solder, Acid. (15) An Emery Wheel Dresser. (16) A Book of Instruction on Band Saw Fitting and Tensioning will be found of use to beginners or those who have had little experience in saw work, and are not familiar with the best practice.

A SMALL BAND SAW FILING ROOM OUTFIT.

The appliances necessary to the proper care of small band saws, ranging from 1-8 to 1, 2 or 3 inches wide, include an automatic filing machine, automatic setting machine, set of adjustable stretching wheels, or racks, for support of saw, a filing vise, a brazing lamp, solder or spelter, etc.

A KNIFE FITTING OUTFIT.

Should include an automatic knife grinder and a balancing machine.

A FILING ROOM OUTFIT FOR RECIPROCATING SAWS.

For gang, frame, web and jig saws, the outfit of machines and tools must depend upon the size and kind of the saws and the methods employed in the fitting, which vary in different localities, but in general for saws that exceed 3 inches wide and 18 inches long, the following appliances, in size suited to requirements, are found desirable:

Automatic Sharpener, Swage, Upset Swage, or Bar and Swaging Hammer, Filing Clamp, Stretcher, Jointer, Swage Shaper or File Sidedresser, Anvil, Hammers, Straight Edges, Emery Wheel Dresser.

For very small gang saws, a Swage, Shaper and Filing Clamp.

A CIRCULAR SAW FILING ROOM OUTFIT.

The selection of Circular Saw Fitting Equipment must depend entirely upon the size and character of the saws, which differ materially in the various sawmills and wood-working plants.

No sawmill of 10,000 or more feet per day capacity can afford to do without an automatic Sharpener, and in mills or factories where there are a considerable number of rip and cut-off saws in use, an automatic rip and cut-off sharpener should be employed.

The use of a machine swage on all large rip saws is indispensable, and a more general introduction of such a tool for swaging small factory saws would afford results far superior to hand swaging, or the mixed use of swage and spring set, or the use of spring set only.

A suitable outfit of hammering tools is always essential. A good equipment will include the following: Automatic Rip Saw Sharpener for large saws. Automatic or Hand Rip and Cut-off Sharpener for medium and small saws. Swage Shaper or File Sidedresser. Instruction Book on Saw Hammering and Fitting.

Illustrative Filing Room Outfits**For 12 to 14 Inch Double Cutting Bands.**

One No. 1C Bolton Double Cut Sharpener, R. & L. H., \$250.
 One No. 5A (\$200) or No. 6A (\$160) Bolton Stretcher and Shear.
 One No. A3-1 Hanchett Band Swage, \$33, or any other preferred.
 One No. 18A Bolton Steel Brazing Clamp, with irons, \$65.
 One No. 24A Bolton Filing Clamp (opening jaw), \$65.
 One No. 21 Bolton Lap Grinder (\$100), or No. 22 Lap Cutter (\$90).
 One No. 15 Bolton Shearing and Crosscutting Machine, \$50.
 One No. 16 Bolton Retooler, with dies to templet, \$35.
 One No. 41 Special Band Brazing Forge, \$30.
 One No. 91 Bolton Patch Machine, \$30.
 One No. 27 Bolton Band Wheel Grinder, with Tool Attachment, \$90.
 One Swage Shaper, Bolton \$20 or Pribnow \$25, or Weston \$25.
 One 10x12 Steel Faced Anvil, \$28, or Chilled Cast Iron Anvil, \$16.
 One 12x48x3 Iron Leveling Block, faced Both Sides, \$25.
 One 6 Foot Double Back Gage, straight and concave, \$6.
 One Pair Band Saw Hammers, \$5.
 One Combination Straight Edge and Tension Gage.
 One File Sidedresser, Jointer, Emery Wheel Dresser, Upset, etc.

For 12 to 14 Inch Single Cutting Bands.

The above outfit is suitable except that the No. 1A Bolton Sharpener, \$200, or the No. 1B Bolton Sharpener, \$225, or the No. 24 Bolton Clomp, \$50, may be substituted.

For 9 to 12 Inch Single Cutting Bands.

Outfit first specified above is suitable except that No. 127A Bolton Band Sharpener, \$175, or the No. 127B Bolton Band Sharpener, \$205, or the No. 7 Bolton Stretcher, \$140, or the No. 18 Bolton Steel Brazing Clamps, \$50, or the No. 24 Bolton Filing Clamps, \$50, may be substituted.

For 5 to 8 Inch Log Bands or Band Resaws.

One No. 2A Bolton Band Sharpener, \$125, or No. 2B, \$135.
 One No. 8A Bolton Stretcher and Shear, \$110, or No. 8, \$100, or 9B, \$85.
 One No. A3-1 Hanchett Swage, \$33, or No. A3-2 Hanchett Swage, \$28, or other type.
 One Swage Shaper, Bolton \$20, or Pribnow \$25, or Weston \$15.
 One No. 26 Bolton 42 Inch Filing Clamp, \$20.
 One No. 20 Bolton 9 Inch Brazing Clamp, with Irons, \$20.
 One No. 21A Bolton Lap Grinder, \$85, or No. 23 Lap Cutter, \$75.
 One No. 21 Special Band Brazing Forge, \$30, or No. 14 Portable Forge, \$20.
 One No. 91 Bolton Patch Machine, \$30.
 One 8x12 Band Saw Anvil, \$20. One 8x48x3 Leveling Block, \$15.
 One Pair Band Saw Hammers, \$5.
 One 5 Foot Double Back Gage, straight and concave, \$5.
 One Combination Straight Edge and Tension Gage.
 One File Sidedresser, Jointer, Upset and Emery Wheel Dresser.

For 2 to 6 Inch Log Bands or Band Resaws.

One Bolton Band Sharpener, No. 3C, \$85; No. 3B, \$90; No. 3F, \$105, or No. 3G, \$110.
 One Bolton Stretcher, No. 9, \$75; No. 9A, \$75; No. 8B, \$75, or No. 8C, \$85.
 One Swage Shaper, Bolton \$15, or Pribnow \$25, or Weston \$15.
 One Swage Bolton \$25, or Hanchett \$28, or other type.
 One No. 14 Portable Brazing Forge, \$20.
 One No. 19 Bolton Brazing Clamps, with Irons, \$15.
 One No. 25 Bolton 36 Inch Filing Clamps, \$15.
 One No. 23 Bolton Lap Cutter, \$75.
 One No. 17 Bolton Retooler and Shear, \$45.
 One 6x10 Steel Faced Anvil, \$10.50.
 One Pair Light Band Saw Hammers, \$5.
 One Combination Straight Edge and Tension Gage.
 One 6x48x3 Leveling Block, faced both sides, \$12.
 One 4 Foot Double Back Gage, straight and concave, \$4.
 One File Sidedresser, Jointer, Upset and Emery Wheel Dresser.

Customers will please take note that for certain widths or gages of band saws, we offer for certain purposes a variety of machines or tools, varying somewhat in style and price. We will be glad to make special recommendations on receipt of specifications as to hand and gage of saws. Orders must specify whether saw is R or L hand, and should always show templet of saw teeth if possible.

SAW AND KNIFE FITTING**THE NEW B. T. & B. MANUAL**

Revised edition. 144 pages. Copiously Illustrated and Durably Bound, is an Exhaustive treatise on the care of Saws and Knives.

A PRACTICAL BOOK FOR SAW FILERS.

Mailed Postpaid on
Receipt of Price,
\$2.00.

Baldwin, Tuthill & Bolton, Grand Rapids, Mich.
Saw and Knife Fitting Machinery and Tools.

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PLEASE INFORM US

IF YOU EXPECT TO ADD A BAND, GANG, CIRCULAR OR BAND RESAW MILL
DURING THE NEXT SIX MONTHS

SAW FILERS Wanting Positions---MILL MEN Wanting Filers

MAY DO WELL TO WRITE US ABOUT IT. WE KEEP POSTED

DOUBLE CUTTING BAND SAW FITTING
SINGLE CUTTING BAND SAW FITTING
BAND RESAW FITTING
NARROW BAND SAW FITTING
GANG SAW FITTING
CIRCULAR SAW FITTING
KNIFE FITTING

OUTFITS

FOR

SAW, PLANING, SHINGLE, STAVE AND HEADING MILLS. FURNITURE, BOX, SASH, DOOR,
BLIND, CHAIR, PIANO, ORGAN, TRUNK, CARRIAGE, WAGON, WHEEL, HANDLE,
HOOP AND BARREL FACTORIES. PICTURE FRAME, MOULDING, SHOW-
CASE, VENEER, EXCELSIOR AND WOOD RIM FACTORIES.
ARSENALS, NAVY YARDS, CAR WORKS, SHIP
YARDS, DRY DOCKS, ETC.

OUR MACHINERY BUILT ON HONOR--STANDARD--WARRANTED

WE HAVE NO COMPETITION in the weight, strength, machine, tool, finish, fine adjustments
and general superiority of our machines

We quote every kind and make of Filing Room Machine or Tool.

We are constantly replacing machines of other makes with our own.

BUY NOTHING IN SAW FITTING EQUIPMENT UNTIL YOU CORRESPOND WITH US.

The Filer and the Job

THE MILLMAN.

In view of the fact that there are always millmen and factory operators who are in want of a good saw filer, well equipped to care variously for bands, gangs, circulars or band resaws, we are led to suggest that we can usually furnish promptly on request the names of saw filers for any kind of saw fitting requirement.

It is not uncommon for a millman to want a filer on short notice, and while there are always filers to be had, he may not have the addresses of any or many such with whom to correspond, and as a result a shutdown of the plant becomes inevitable.

THE FILER.

Then, too, there are always filers seeking employment to whom we can perhaps be of service in supplying names of vacancies when known to us, or lists of mills building or refitting, correspondence with which frequently results in engagements.

It may be understood that we make no charge to anyone for our services, and assume no responsibility for our references, as we assume that filers of ability can recommend themselves, either by past records or by a practical display of their ability, and we expect all communications pertaining to employment to be conducted directly between those to whom we give information.

Our extensive traveling and correspondence, and familiarity with what is going on among the mills, give us peculiar opportunities for rendering such services, and we will give prompt and careful attention to communications of this character from either millmen or filers on receipt of information as to their requirements or capabilities.

LIST OF MILLS.

We are prepared to furnish special typewritten lists of band, band resaw or other mills in any state, or group of states, to machinery houses, sales agents, filers, etc., for use in special canvass or correspondence, at a price of two cents per address.

B. T. & B. KNIFE GRINDERS

14 Sizes
26 to 156 inch Capacity



PROMINENT FEATURES:

<i>WEIGHT</i>	<i>AUTOMATIC</i>
<i>STRENGTH</i>	<i>EFFICIENT</i>
<i>RIGIDITY</i>	<i>WET OR DRY</i>
<i>WORKMANSHIP</i>	<i>VALUE ASSURED</i>

EXTENSIVELY SOLD
—AND—
UNIFORMLY SATISFACTORY

NO WATER IN THE PRICE LIST
FULLY TESTED AND EQUIPPED

BALDWIN, TUTHILL & BOLTON

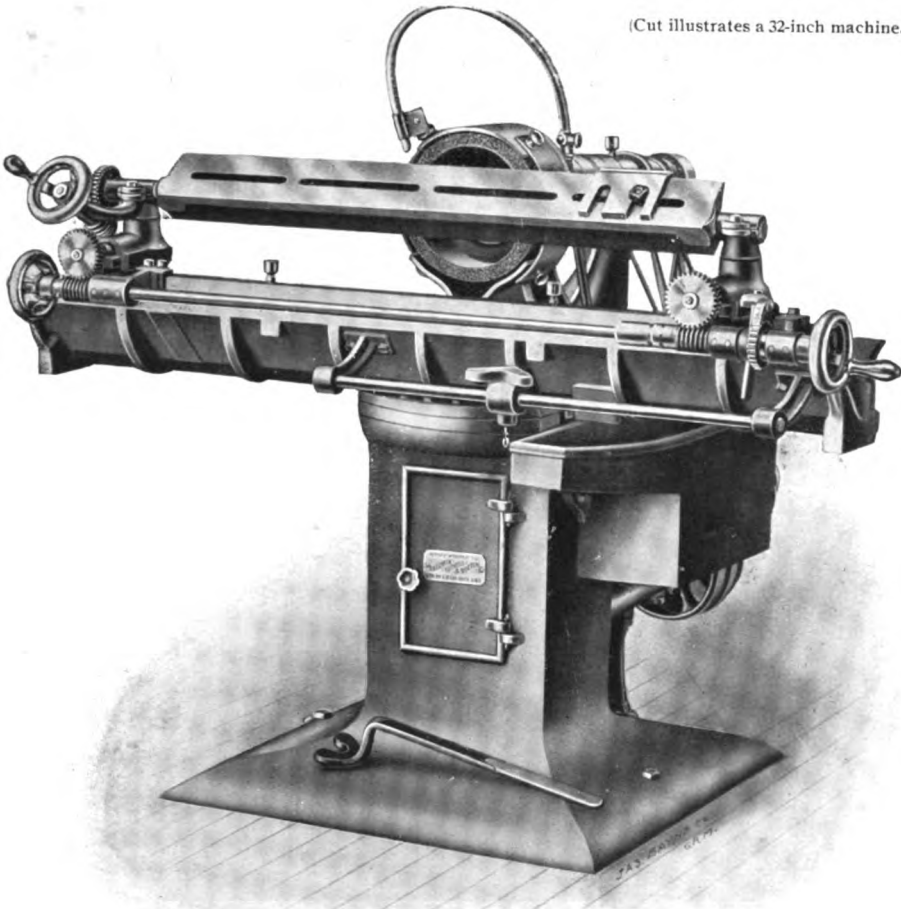
GRAND RAPIDS, MICH., U. S. A.

FILING ROOM OUTFITS FOR ALL PURPOSES.

144 PAGE MANUAL ON SAW AND KNIFE FITTING, POSTPAID, \$2.00.

Style D—B. T. & B. Full Automatic Cup Wheel Knife Grinder
 With automatic screw cross feed, Water Attachments, and reversible knife holder for front or back beveling.

(Cut illustrates a 32-inch machine.)



MACHINES in the above style, automatic in all respects, with water attachments, equipped with belting and cup wheel, knife holder as illustrated, with bolts for knives, will be furnished crated for shipment, f. o. b. cars Grand Rapids, at the following prices for sizes 26 to 48 inch capacity.

10 per cent advance for machines boxed f. o. b. cars New York for export.

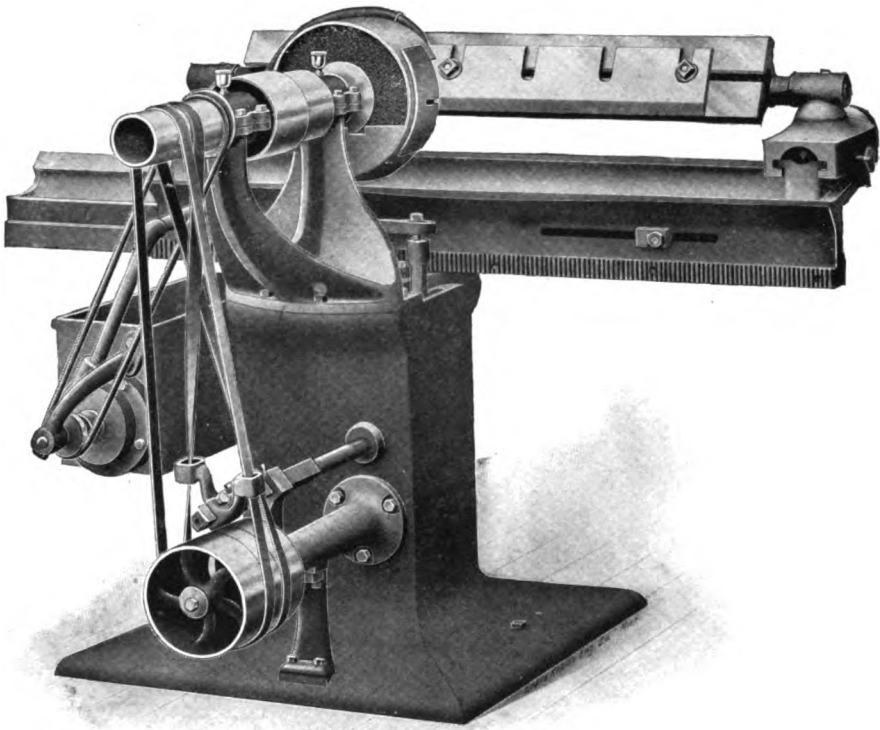
No.	Price with automatic water attachments	Approximate Weight—lbs.	Price without automatic water attachments
150D—26-inch Column Grinder, complete.....	\$102	675	\$ 92
151D—32-inch Column Grinder, complete.....	114	750	104
152D—38-inch Column Grinder, complete.....	126	825	116
153D—44-inch Column Grinder, complete.....	138	875	128
154D—48-inch Column Grinder, complete.....	150	900	140

New wheels each, \$4.

The tight and loose pulleys are $4\frac{1}{2}$ inch diameter by $3\frac{1}{2}$ inch face and should run from 1200 to 1400 revolutions per minute, according to grade of wheel in use. Size of base on floor 26x26. Height to spindle 35 inches. Adjustable posts supports for ends of bed supporting knife holder are furnished with 32 to 48 inch sizes. Automatic cross-feed mechanism may be set to stop as required. Machine will afford *flat or concave* grind.

The V-shaped dog which trips the feed pawl may be set to feed from 1-10000 to 8-10000 inch at each round trip of slide, thus giving operator a wide range in degree of cross-feed. We recommend these machines as desirable in every way.

Style A and B—B. T. & B. Automatic Cup Wheel Knife Grinder



Cut shows 26 Inch, Style B, Grinder.

Style A has Belting and Cup Wheel, no Water Attachments.

Style B has Belting, Cup Wheel and Automatic Water Attachments.

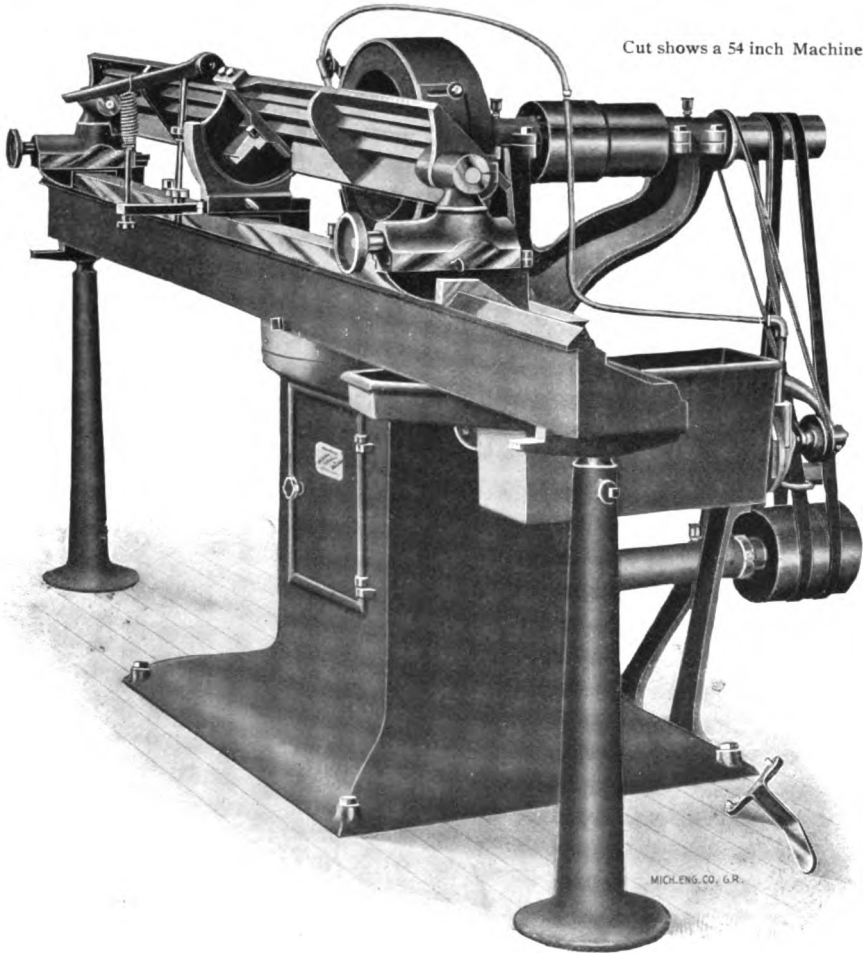
A VERY HEAVY, substantial and well-built machine, adapted to either flat or concave grinding. By slacking one bolt the slide can be set at different angles before the wheel. If set at a right angle to emery wheel spindle, the knife will traverse back and forth against the flat face and the knife be ground to a *flat bevel*. If it is set at any other angle the edge of wheel will do the grinding, and a *concave grind result*. These adjustments will be appreciated by anyone preferring a flat, stout edge for rough work, and a thin concave for fine work. The feed works are within the column. After the machine is started it requires little or no attention. The carriage has an even traverse back and forth and reversing is accomplished without noise or jar. The shafts are all of heavy steel with long babbitted bearings. All bearings hand scraped and provided with oil cups. The cup wheel is 8x3½ inches and is provided with guard. Many of these machines are sold as dry grinders, but automatic water attachments will be furnished as illustrated by engraving, at a net advance of \$10.00. It is well to accompany order with a description of the knives to be ground. These grinders are offered with a full warranty and guaranteed the best of their kind in the market, and quite equal in efficiency to machines costing very much more. The tight and loose pulleys are 4½ inches diameter by 3½ inch face and should be run about 1200 revolutions per minute. Size of base on floor, 26x26. Height to spindle, 35 inches. Measurement of 26-inch machine crated, about 42x41x40 inches. No charge for crating for rail shipments. Boxing for export at cost. One wheel and belting with each machine. New wheels \$4.00. Adjustable post supports furnished for 32 to 48 inch sizes.

Boxing for export increases weights from 200 to 400 pounds.

We recommend these machines to all customers as high-grade knife grinders at a very low price.

Fifteen per cent. advance for boxing and delivering at New York for export.

	Style A—Price	Weight	Style B—Price
No. 150A—26-inch Column Knife Grinder.....	\$ 75	675	\$ 85
No. 151A—32-inch Column Knife Grinder.....	85	750	95
No. 152A—38-inch Column Knife Grinder.....	95	825	105
No. 153A—44-inch Column Knife Grinder.....	105	850	115
No. 153B—48-inch Column Knife Grinder.....	115	900	125

Style C—B. T. & B. Extra Heavy Column Knife Grinder

Cut shows a 54 inch Machine

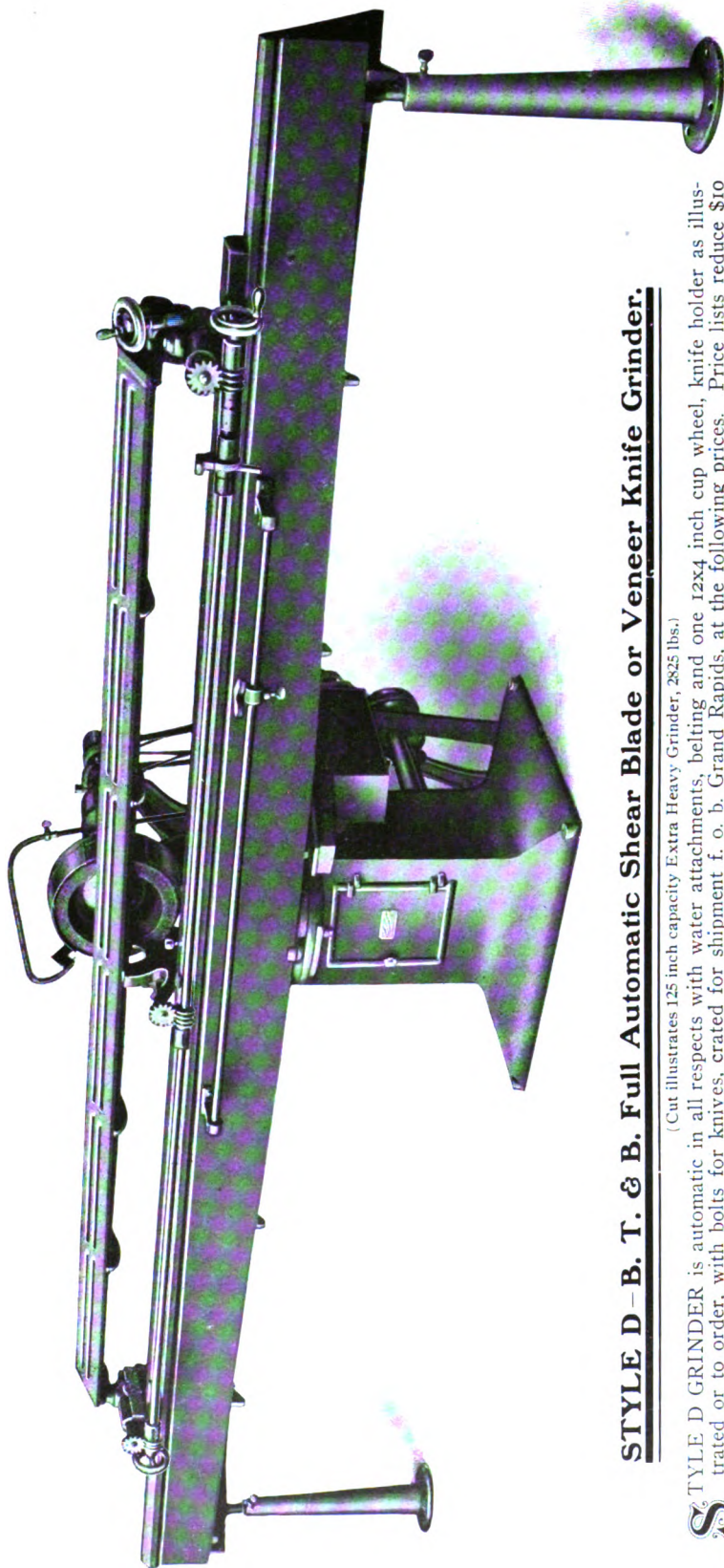
In Sizes for Knives from 54 to 156 Inches Long.

No. 156C—54-inch Knife Grinder.....\$175.00, 1,400 lbs.	No. 160C— 90-inch Knife Grinder.....\$225.00, 1,800 lbs.
No. 157C—60-inch Knife Grinder.....185.00, 1,500 lbs.	No. 161C— 96-inch Knife Grinder.....235.00, 1,900 lbs.
No. 158C—76-inch Knife Grinder.....205.00, 1,600 lbs.	No. 162C—108-inch Knife Grinder.....250.00, 2,000 lbs.
No. 159C—84-inch Knife Grinder.....215.00, 1,700 lbs.	No. 163C—125-inch Knife Grinder.....300.00, 2,800 lbs.
	No. 164C—156-inch Knife Grinder.....450.00, 3,800 lbs.

Boxing for Export f. o. b. New York, 15 per cent. advance.
Price lists reduced \$10 if ordered without water attachments.

THE B. T. & B. Extra Heavy Column Knife Grinder illustrated above is adapted to a variety of work such as the grinding of veneer and planer knives, shear and doctor blades and the variety of knives used on paper, rag and tobacco cutters, leather splitting machines, bark mills, refuse grinders, etc. A *flat bevel* results when knife is run at right angles to emery wheel spindle, and a *concave grind* when knife runs obliquely and the grinding is accomplished on the rounded edge of wheel. The machine is supplied with belting, automatic water attachments and a cup-wheel 12 inches in diameter, 4 inches high, with $1\frac{1}{4}$ rim, 1 back and $1\frac{1}{4}$ inch hole. The travel and reversing of carriage is automatic, the feed works within the column. The feed-up of knife to wheel is not an automatic screw feed but is accomplished with two hand wheels, in connection with a lever and spring device illustrated, which feeds the knife to wheel with an easy pressure. It is an efficient feed device that gives excellent satisfaction. Always accompany order or inquiry with full information regarding the sizes and kind of knives to be ground. Size of base on floor 26 x 34 inches. Height to center of spindle for wheel, 37 inches. New wheels each, \$7. The machine is heavy and well built throughout. The bed for knife carriage is supported at each end, wearing surfaces hand-scraped, and no expense in material or labor cost is spared that is essential to the production of an efficient machine.

We recommend these machines as high-grade and efficient.



STYLE D—B. T. & B. Full Automatic Shear Blade or Veneer Knife Grinder.

(Cut illustrates 125 inch capacity Extra Heavy Grinder, 2825 lbs.)

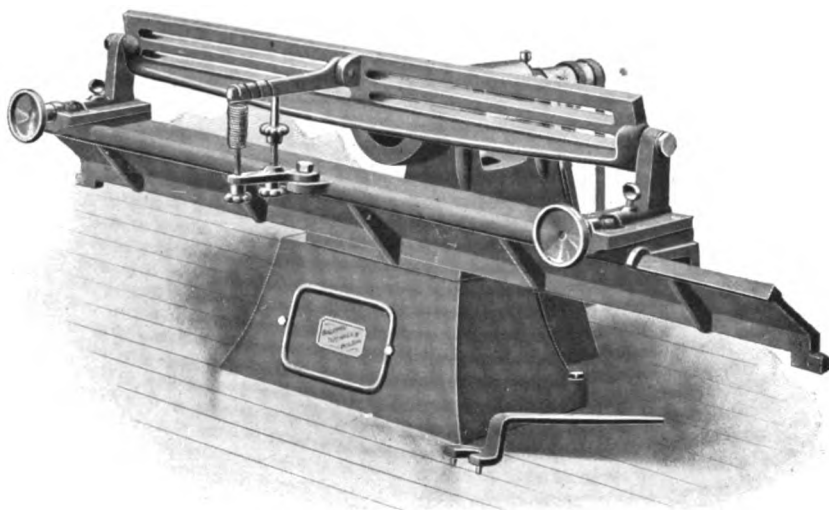
STYLE D GRINDER is automatic in all respects with water attachments, belting and one 12x4 inch cup wheel, knife holder as illustrated or to order, with bolts for knives, crated for shipment f. o. b. Grand Rapids, at the following prices. Price lists reduce \$10 if ordered without water attachments:

No.	Price	Approx. Crated Weight—lbs.	No.	Price	Approx. Crated Weight—lbs.
156D—54-inch Grinder,	-	1400	160D—90-inch Grinder,	\$259	1800
157D—60-inch Grinder,	-	1500	161D—96-inch Grinder,	271	1900
158D—76-inch Grinder,	-	1600	162D—108-inch Grinder,	287	2000
159D—84-inch Grinder,	-	1700	163D—125-inch Grinder,	345	2825
			164D—156-inch Grinder,	500	3800

Machine will afford a **flat or concave grind**. Size of base on floor, 26x34 inch. Height to center of spindle, 37 inch. Adjustable post supports for ends of bed. New wheels each \$7. T. & L. pulley 5-in. diameter 4-in. face. Speed 1000 to 1200 according to grade of wheel. Cross feed may be set to stop as required. Machine will be furnished to order for any purpose to which it can be adapted.

10 per cent advance on the lists for machines boxed f. o. b. cars New York for export.

The V shaped dog which trips the feed pawl may be set to feed from 1-10000 to 8-10000 inch at each round trip of slide, thus giving operator a wide range in degree of the cross feed. Measurements 156-inch Grinder: Base, 34x48 inch. Height to arbor, 44-inch. Length over all, 20 feet. Width over all, 48-inch. Floor space for operating, 29 feet. T. & L. pulleys, 6-inch diameter 4-inch face. Boxed for export, 2 cases, 38x50x51 inches, 1700 pounds and 23x32 inches x 20 feet 4 inches, 3400 pounds.

Style E—B. T. & B. Automatic Bench Cup Wheel Knife Grinder

FURNISHED WITH BELTING AND ONE WHEEL.

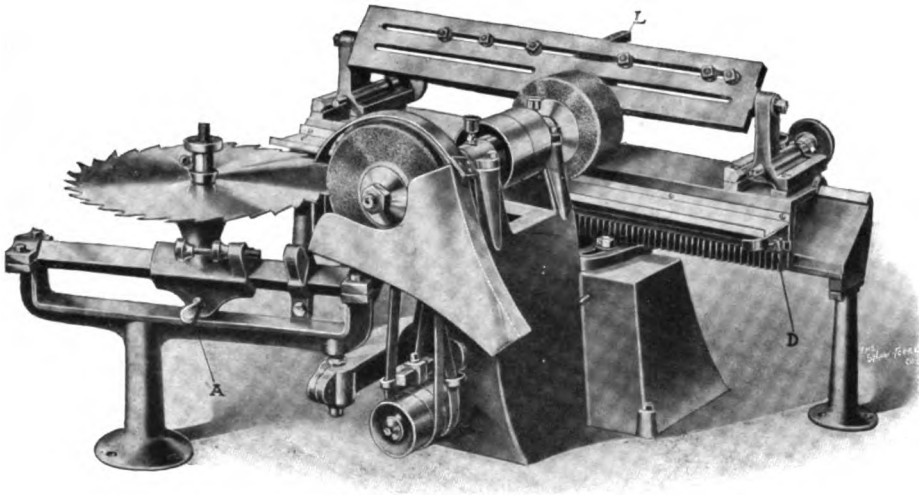
No. 147—26-inch Knife Grinder, Approximate Weight 350 pounds.....	{ No Water Attach- ment }	.....\$50 00
No. 148—32-inch Knife Grinder, Approximate Weight 425 pounds.....		.....55 00
No. 149—38-inch Knife Grinder, Approximate Weight 500 pounds.....		.....60 00

Fifteen per cent. advance for boxing and delivery at New York for export.

THE B. T. & B. BENCH KNIFE GRINDERS are designed for saw-mills and wood-working plants of medium or limited capacity that require an efficient but inexpensive machine. The machines are substantial and well built, *adapted to either flat or concave grinding*. By slacking one bolt the slide can be set at different angles before the wheel. If set at a right angle to emery wheel spindle, the knife will traverse back and forth against the flat face and the knife be ground to a flat bevel. If it is set at any other angle the edge of wheel will do the grinding and a concave grind result. These adjustments will be appreciated by those preferring a flat stout edge for rough work and a thin concave for fine work. The feed works are within the column. After the machine is started it requires little or no attention. The carriage has an even traverse back and forth and reversing is accomplished without noise or jar. All bearings are hand-scraped and provided with brass oil cups. The cup wheel is 6 inch diameter with 3 inch face and is run dry. It is well to accompany order with description of knives to be ground. The tight and loose pulleys are 4-inch diameter, 2-inch face and should run about 1400 revolutions per minute. New wheels each \$3.00. Boxing for export at cost. No charge for crating for rail shipment.

We offer these machines with full warranty and guarantee them to have exceptional value, notwithstanding their low price.

**Style F--B. T. & B. Automatic Bench Cup Wheel Knife Grinder with
8 to 24 inch Circular Rip Saw Gummer Attachment.**



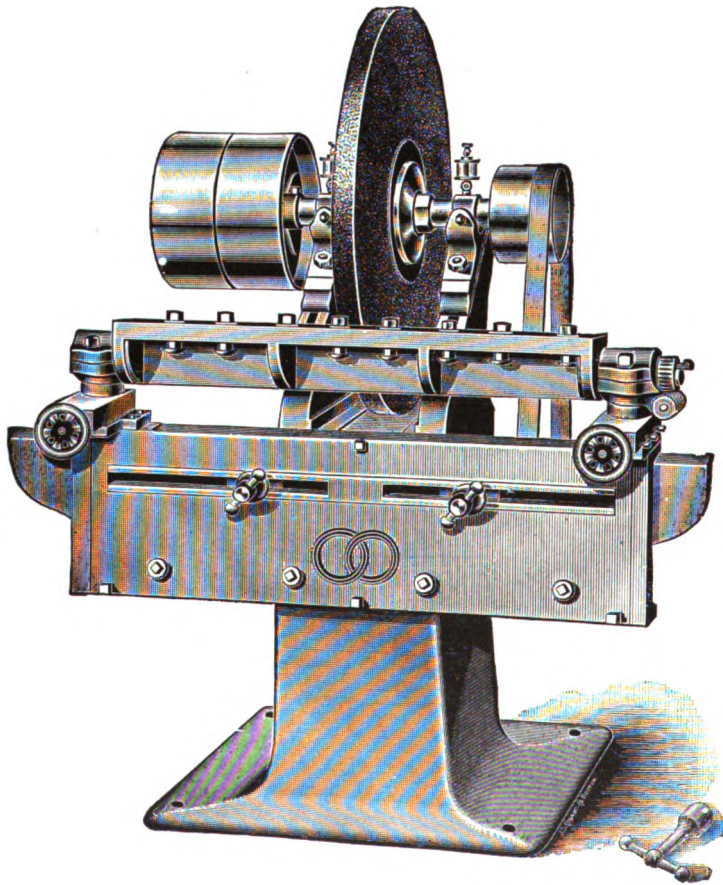
The combination Knife Grinder and Saw Gummer illustrated is recommended to operators of saws and knives whose requirement is for an inexpensive machine. There are concerns having a real need for this machine, whose loss in time or bad work of poorly fitted saws and knives would pay for it one or more times each year. With each machine we furnish one 6x3 inch cup wheel, one 8x $\frac{3}{8}$ inch saw gumming wheel, internal belting and bolts for knives. The machine should be erected on a bench or table about 18 inches high. Post supports for ends of bed are furnished with the 32 and 38 inch sizes. Dogs D at ends of carriage may be set to reverse to suit the length of knives being ground. Handle A enables the operator to feed the saw forward and backward in the process of gulleting, and the slide is provided with a stop to insure a uniform depth of gullet. Lever L is controlled by a spring feed device, for feeding the edge of knife against wheel in the process of grinding. The standard for supporting saw gumming attachment can be set to afford any hook desired. The gumming wheel is provided with a guard and hood for protecting the machine from emery dust. No water attachments are furnished. The machine is a bargain at the price and may be ordered with confidence by those whose requirements do not justify the purchase of separate machines more expensive and desirable.

No. 147-F--26 inch Knife Grinder (saw gummer attachment).....	\$65 00
No. 148-F--32 inch Knife Grinder (saw gummer attachment).....	70 00
No. 149-F--38 inch Knife Grinder (saw gummer attachment).....	75 00

Fifteen per cent. advance for boxing and delivery on cars at New York for export.
Drive pulley 4-inch diameter, 2-inch face, speed about 1400.

Straight Wheel Automatic Knife Grinding Machine.

Shown Without Water Attachment.

**PRICE INCLUDES EMERY WHEEL, 26 INCH DIAMETER, 1½ INCH FACE.**

No. 195 for 24 inch.	635 lbs.	.....	Dry Grinder, \$125	Wet Grinder \$165
" 196 " 30 "	675 "	.....	" " 135	" " 175
" 197 " 36 "	700 "	.....	" " 145	" " 190
" 198 " 42 "	740 "	.....	" " 155	" " 200
" 199 " 50 "	835 "	.....	" " 165	" " 215
" 200 " 60 "	1025 "	.....	" " 215	" " 270
" 201 " 80 "	1170 "	.....	" " 250	" " 320

A simple durable machine. Driving gear enclosed within base. Take ups for wear. Will grind all straight knives, cutters, shears, etc., to any bevel. Cut illustrates the "DRY" Grinder. The "WET" Grinder is furnished with cast iron hood, drip pan, and water conveyors. All drip from the knife bar and interior of the hood is carried to a removable pan, the overflow from which escapes through waste pipe in the base. Tight and loose pulley 10x4 inches, speed 250.

15 Per Cent Advance in Price for Boxing and Delivery f. o. b. Cars New York for Export.

Testimonials That Prove Our Claims**54-INCH PAPER KNIFE GRINDER.**

W. C. RITCHIE & CO., CHICAGO, ILL.—Your letter of January 28th at hand, and in reply beg to state that the B. T. & B. Knife Grinder which you sold us some time ago is doing very satisfactory work and fully comes up to our expectations.

108-INCH PAPER KNIFE GRINDER.

BROWNVILLE BOARD CO., BROWNVILLE, N. Y.—We take pleasure in stating that the B. T. & B. Knife Grinder which you shipped us in March, 1902, has done excellent work for us, and has given us entire satisfaction. Were we in the market today for a knife grinder, we certainly would order another like it.

W. H. TRIDEL, GREENVILLE, MISS.—I have the Knife Grinder you sold to Paepcke Leicht Lumber Co., Greenville, Miss., here in operation and it is giving good satisfaction and think they will buy a new band sharpener soon. Please send me your new catalogue.

38-INCH GRINDER.

OATES MATTRESS CO., LITTLE ROCK, ARK.—The Knife Grinder has been received and pleases us very much. We use this for grinding knives six inches wide, and want to grind six at a time. You sent only four bolts which will accommodate but two of the knives. Kindly send us by mail, or express, eight additional bolts and oblige.

26-INCH BENCH GRINDER.

ACUSHNET SAW MILL CO., ACUSHNET, MASS.—We have now used your small grinder for more than a year and find that it does perfect work. It is hard to see how a better working machine could be made at any price.

48-INCH VENEER KNIFE GRINDER.

NATIONAL VENEER CO., CHARLESTON, W. Va.—We are pleased to state that we have found the B. T. & B. Knife Grinder which you supplied us some time ago to be perfectly satisfactory in every respect and well suited to our requirements, and cheerfully recommend it to any needing a Knife Grinder.

32-INCH GRINDER.

BADGER BOX & LUMBER CO., GRAND RAPIDS, WIS.—The Knife Grinder we purchased from you in 1901 has been in constant use since then and has given satisfaction in every particular. It has cost us absolutely nothing for repairs and is apparently in as good condition today as when received from you. We are well pleased with it, as well as the other filing room machinery purchased from you.

THE U. N. ROBERTS CO., DAVENPORT, IOWA.—In March last year we bought one of your 26-inch automatic Cup Wheel Knife Grinders, and have done all our work in that line on this machine, and it has not cost us one cent for repairs, and it bids fair to last many years longer, doing the same work. We know of no machine that is better than this one, and are thoroughly satisfied with our purchase.

CANNON BOX CO., GENEVA, ILL.—Referring to your favor of the 28th, we enclose herewith the desired letter and mean just what it says: "Referring to your favor of recent date in regard to the B. T. & B. Knife Grinder purchased from you last year, can say that it does the work far better than any Grinder we have tried. We can recommend it to any one in need of a first-class Grinder."

OIL CITY WOOD WORKING MFG. CO., OIL CITY, PA.—In answer to yours of January 28, 1904, we have been using your B. T. & B. Knife Grinder for one year and it is O. K. in every part.

DAVIS WAGON CO., COLUMBUS, GA.—Replying to yours of the 28th. Your Knife Grinder has given entire satisfaction and we would not be without it for twice the price of same if we could not get another one.

O. J. BEAUDETTE & CO., PONTIAC, MICH.—On October 22nd, 1901, we bought from you a 32-inch Knife Grinder, No. 151. We have used this machine ever since and are well satisfied with the work it has done and is still doing at the present time. This machine has fully done all the work required of it, and we are pleased to recommend it to any one that may require one in their business.

44-INCH GRINDER.

METAL BOUND PACKAGE CO., MOUND CITY, ILL.—Replying to yours of the 28th asking how we were pleased with your Knife Grinder. We are very much pleased to say that it has given us entire satisfaction, and we will have no complaint whatever to

make. In a few days we will have to take up the matter of buying from you a much larger one than we have, and expect to give you the refusal of our order.

GRAND RAPIDS SHOW CASE CO., GRAND RAPIDS, MICH.—It gives us pleasure to inform you that the B. T. & B. Knife Grinder purchased of you some time since, has not only given us entire satisfaction, but is pronounced by some of our best machinists to be without an equal on the market.

WATERTOWN THERMOMETER CO., WATERTOWN, N. Y.—The Knife Grinder you sent us is giving entire satisfaction. It meets well with our requirements, and we could not afford to be without the machine. We will send you another order for an Emery Wheel for concave grinding, which you will receive in a few days, and trust that prompt shipment of same will be made.

BROWN'S LUMBER CO., WHITEFIELD, N. H.—Replying to your letter of January 28th, beg to say that the 32-inch Cup Wheel Knife Grinder purchased of you in December, 1902, has fully met our expectations in the work it was designed to perform, and we are pleased to recommend this style of Grinder to prospective buyers.

125-INCH METAL SHEAR BLADE GRINDER.

ART METAL CONSTRUCTION COMPANY, JAMESTOWN, N. Y.—"Your letter of the 29th instant came duly to hand and owing to very pressing matters, it was necessary to lay this aside for the time being. We have gone over the matter quite carefully and have decided, provided you will send your machine to us with full guarantee, to be perfectly efficient, economical, well built and adequate for grinding heavy shear blades, and for other purposes for which it is intended, you may enter our order for one of your extra heavy 120-inch column Knife Grinders, with full automatic screw feed, as more fully described in your letter above referred to. Now, it is not our intention to negotiate for anything but a perfectly satisfactory machine, for the purpose intended, unless you have full confidence in your manufacture, we prefer that you should advise us rather than accept our order. In any event we shall expect to hear from you by early mail, so that we may know what can be expected in the matter."

"Please ship us one Extra Heavy 125-inch B. T. & B. Column Knife Grinder with automatic attachments, as per our letter of this date, and your letter of December 29th, for the sum of \$345, f. o. b. cars, Grand Rapids, Mich."

AFTER OPERATING ONE AND ONE-HALF YEARS.

Referring to your communication of January 28th we beg to advise you that the B. T. & B. Knife Grinder shipped us some time over a year and a half ago was put in commission immediately after it arrived here and we have been using it with entire satisfaction ever since. The machine does good work and we feel that we could not keep house without it.

108 AND 156-INCH DOCTOR BLADE GRINDERS.

THE NAIRN LINOLEUM CO., NEWARK, N. J.—Please quote us a price on one machine for grinding 13-foot doctors, the machine to be same as the 108-inch size you sent us last time, only for longer blade. The machine to be ready for shipment abroad. Tell us when you could deliver the same.

(Later)—We accept the price quoted by you in yours of the 16th inst., for one 13-foot extra heavy Knife Grinder, with automatic screw cross-feed and boxed for exportation. Price \$500.00, f. o. b. Grand Rapids. Owing to the great length of the slides, we ask that you be careful about putting in plenty of clamps. When ready for shipment, please mark case "Michael Nairn & Co., Ltd., Sinclairtown Station, Scotland," and advise us and we will give the necessary shipping orders.

90-INCH PAPER KNIFE GRINDER.

WORONOCO PAPER CO., FAIRFIELD, MASS.—Replying to yours of the 23rd ult., beg to say that you may enter our order for your No. 160 D Knife Grinding Machine at \$259.00. We shall want one of those grinding up to 90 inches. We hope you will use all possible speed in getting it out, and oblige.

D. H. DAVIDSON, PHILADELPHIA, PA., to (Nonpareil Cork Mfg. Co., Camden, N. J.)—We are now using the Baldwin, Tuthill & Bolton Co.'s Knife Grinder machines, and they are giving us good results. In our opinion, this firm manufactures the best machinery on the market today, as our machines have never been out of order and have been running satisfactorily since they were put in years ago.

W. P. MESLER & CO., CORDEN, ILL.—We are well pleased with the B. T. & B. Knife Grinder you furnished us over one year ago. This machine keeps our knives in good working order.

EASTERN MFG. CO., SOUTH BREWER, MAINE—The Knife Grinder purchased from you is now in operation and is giving excellent satisfaction, and think it is the best machine we ever saw for the money.

48-INCH GRINDER.

THE SINGER MFG. CO., CAIRO, ILL.—We are in receipt of yours of the 29th ult. and in reply would say that it is against our instructions to give testimonials as you request, but you are at liberty to refer prospective customers to us, at any time you so desire, for information regarding your Knife Grinders.

76-INCH VENEER KNIFE GRINDER.

STANDARD VENEER CO., STOCKHOLM, MAINE—We have used your Knife Grinder now for almost two years, and find it gives satisfaction in every respect. It does nice work.

J. D. JOHNSON, NEWPORT, R. I.—The Knife Grinder I bought of you has given perfect satisfaction and I can recommend it to any one in need of such a machine.

32-INCH GRINDER.

THE IRONTON DOOR & MANUFACTURING CO., IRONTON, OHIO.—Replying to yours of the 15th, would say that we have been using one of your B. T. & B. Knife Grinders for some two years, and find it very satisfactory and well suited to our requirements. We would cheerfully recommend it to any one who is in need of such a machine.

38-INCH GRINDER.

THE WAYNESBURG PRESSED STEEL CO., WAYNESBURG, PA.—We wish to add our testimony to the merits of the 38-inch Knife Grinder that we purchased from you some months since. It has given us perfect satisfaction in every respect, and we consider it superior to any automatic Knife Grinder in the market.

26-INCH GRINDER.

C. B. HOWARD CO., EMPORIUM, PA.—We are very well pleased with the Knife Grinder which you sold us recently, and consider it as good, if not better, than any we have used or seen.

26-INCH GRINDER.

LITTLE ROCK FURNITURE MFG. CO., LITTLE ROCK, ARK.—We are more than pleased with the B. T. & B. Knife Grinder. It does its work perfectly and with very little expense. It is a perfect piece of mechanism.

32-INCH GRINDER.

GRAND RAPIDS VENEERED DOOR CO., LTD., GRAND RAPIDS, MICH.—About two years ago we purchased one of your B. T. & B. Knife Grinders for our factory and have used the same constantly. It gives us perfect satisfaction and we cannot speak too highly of it.

26-INCH GRINDER.

ROME BOX & LUMBER CO., ROME, N. Y.—We have been using one of your automatic Knife Grinders for the past three years and find it a perfect machine, and it has proven satisfactory in every respect. We have no suggestion to make whereby it might be improved.

32-INCH GRINDER.

THE J. M. DENNIS LUMBER CO., RHODES, ARIZONA—The Baldwin, Tuthill & Bolton Knife Grinder purchased of you some years ago, has been continuously in use, and is giving excellent satisfaction in all respects.

32-INCH GRINDER.

OATES MATTRESS CO., LITTLE ROCK, ARK.—We have in use in our plant your B. T. & B. Knife Grinder and we are more than pleased with it. It does its work in a perfect manner, is very simple in construction, is easily kept up and a great labor saver.

32-INCH GRINDER.

JOHN COLEMAN, WILLIAMSPORT, PA.—I am in receipt of yours of the 5th in regard to B. T. & B. Knife Grinder and in reply would say, I am very well satisfied with it. I consider it a good grinder and well suited for my requirements.

76-INCH VENEER KNIFE GRINDER.

GEORGE SINCLAIR PACKAGE CO., WASHINGTON, MICH.—Your 76-inch automatic Knife Grinder furnished us about one year ago has done good service. We use it for grinding our pressure bars as well as veneer knives. We can cheerfully recommend your machine.

32-INCH GRINDER.

McGRAY REFRIGERATOR CO., KENDALLVILLE, IND.—We are highly pleased with the B. T. & B. automatic Knife Grinder that you sold us a year ago. We find it everything you claim for it and comes fully up to our expectations.

90 Inch Grinder

WORONOCO PAPER CO., FAIRFIELD, MASS.—We are handing you check for Knife Grinder, which we are glad to say is extremely satisfactory. We did not receive this until March 11, and as we do not pay for material until it has been received and examined, your bill was not paid more promptly. We trust that this settlement will be satisfactory to you, and assuring you that we can always recommend your grinder, we remain, etc.

ALICE FALLS CO., AU SABLE CHASM, N. Y.—Your letter at hand and contents noted. Would say that we have been using your B. T. & B. Knife Grinder for the past two years and are very much pleased with it.

THE FREMONT FURNITURE CO., FREMONT, OHIO.—In answer to your letter will say that we have one of your Bench Planer Knife Grinders, that has been in use in our factory for the past two years and we have found it perfectly satisfactory. Would recommend same to anyone who has use for a machine of this kind. Wishing you success in your business, which we feel that you are entitled to, we remain, etc.

ELK RAPIDS IRON CO., ELK RAPIDS, MICH.—Replying to your letter we are pleased to say that the 32-inch Grinder purchased from you a year ago has given entire satisfaction. In fitting knives in our Hard Wood Flooring Plant, it has been especially convenient, as the knives are both ground and back beveled without removing them from the machine.

VAUGHAN LUMBER CO., VAUGHAN, N. C.—The Knife Grinder bought of you last year gives perfect satisfaction, and is a great saver in labor, time, etc., as well as in keeping knives straight and sharp. We set knives and leave it and it does the work with little attention. This style A Grinder is the grinder for cheapness and good results.

F. I. NICHOLS & CO., GRAND RAPIDS, MICH.—We are pleased to inform you that the 32-inch D Grinder purchased from you last March for our Flooring Mill is giving us the most perfect satisfaction, and we can recommend it to anyone desiring this kind of a machine.

COLBY, HINKLEY CO., ALANSON, MICH.—We have found the B. T. & B. Knife Grinder satisfactory in every respect, and our only regret is that we did not order it several years ago.

EVANSVILLE HOOP CO., EVANSVILLE, IND.—In reply to your favor beg to say that we have had one of your Bench Grinders in use for nearly a year, and it is giving satisfaction and doing good work.

THE CONLEY FOIL CO., NEW YORK.—Probably the requirements to which we put your 76-inch D Grinder are more exacting than it would meet with under ordinary conditions. In any case we have a good grinder and we are satisfied with it.

RIB LAKE LUMBER CO., RIB LAKE, WIS.—The Knife Grinder is all right, and is doing good work and we are well pleased with it.

DOW CHEMICAL CO., MIDLAND, MICH.—We are pleased to state that your machine has and is giving us satisfaction.

L. G. KING, DULUTH, MINN.—The 26-inch style A Grinder you shipped to D. G. Cutler is up and running, and it's O. K. Will recommend your machine to anyone wanting to buy one.

THE TABB-BENTLEY CO., HAMPTON, VA.—Enclosed please find check for \$4.00 for extra cup wheel sent with our 26 Style D Knife Grinder. We are very much pleased with the machine. It does excellent work and runs very smoothly; no jar at all.

J. T. PLUMER, MOREHEAD, KY.—The B., T. & B. 26-inch Style E Bench Knife Grinder you shipped us last September is giving entire satisfaction. You will please ship us another one of the same machines you shipped before at \$49, C. O. D. Please ship at once.

GEORGE W. WHITE, DREW, MAINE.—The 26 Style B Grinder gives satisfaction.

Some Customers For B. T. & B. Knife Grinders

- J. A. Fay & Egan Co., Cincinnati, O.
Peckham Wolf & Co., Schenectady, N. Y.
John Hofman & Co., Rochester, N. Y.
Reading Iron Co., Reading, Pa.
Southern Seating & Cabinet Co., Jackson, Tenn.
Tomahawk Stave & Veneer Co., Tomahawk, Wis.
Woronoco Paper Co., Fairfield, Mass.
Michael Nairn & Co., Sinclairtown, Scotland.
Rib Lake Lumber Co., Rib Lake, Wis.
Schoepfle Mfg. & Lumber Co., Sandusky, O.
Willingham & Co., Chattanooga, Tenn.
H. B. Smith Machine Co., Smithville, N. J.
Spirit Falls Excelsior Co., Spirit Falls, Wis.
C. & O. Ry. Shops, Clifton Forge, Va.
Harnett Lumber Co., Manchester, N. C.
J. R. Cobb, Greenville, N. C.
Berlin Machine Works, Beloit, Wis.
Haskell & Barber Car Co., Michigan City, Ind.
Philadelphia Screen Mfg. Co., Philadelphia, Pa.
Gates Lumber Co., Wilmar, Ark.
Sinsabaugh & McConnell, Utica, O.
M. E. Sprage, Drew, Me.
Geo. W. Dana, Camden, N. Y.
Alfred H. Whitney, South Ashburnham, Mass.
L. A. Kimball, New York.
Paton Mfg. Co., Leominster, Mass.
Huth Bros., Rochester, N. Y.
Kentucky Saw Works, Louisville, Ky.
United States Bobbin & Shuttle Co., Providence
United States Engineer, Keokuk, Ia.
Hugh McLean & Co., Highland Park, Ky.
J. M. Hutton & Co., Richmond, Ind.
Lothmann Cypress Co., St. Louis, Mo.
Superior Machine Works, Chicago.
Handley & Clendenin, Lakeview, Ore.
Malta Vita Food Co., Battle Creek, Mich.
Kelly Shingle Co., Traverse City, Mich.
Seymour Furniture Co., Seymour, Ind.
Robinson & Cary Co., St. Paul, Minn.
E. K. Morris & Co., Cincinnati, Ohio.
George Sinclair, Washington, Mich.
Mohr Burt Lumber Co., Holt, Wis.
Brown's Lumber Co., Whitefield, N. H.
Parke & Lacey Co., Sydney, Australia.
Sawyer & Austin Lumber Co., Pine Bluff, Ark.
Simonds Saw Co., Portland, Ore.
James Ohlen & Sons Saw Mfg. Co., Columbus, Ohio.
McCrays Refrigerator Co., Kendallville, Ind.
Singer Mfg. Co., Cairo, Ill.
Hyman Supply Co., Newborn, N. C.
W. S. Milne, Cleveland, Tenn.
Smith Courtney Co., Richmond, Va.
Wm. Jones, Ashville, N. C.
T. W. McClelland Co., Davenport, Iowa.
E. N. Dickerson, Granville, N. C.
C. C. Mengel, Jr. & Bro., Louisville, Ky.
Standard Scale Co., Rome, Ga.
F. B. Woodbury, Orwell, N. Y.
John Dupree & Co., Grand Rapids, Mich.
Art Metal Construction Co., Jamestown, N.Y.
Camden Lumber Mfg. Co., Camden, S. C.
Algoma Commercial Co., S'te Marie, Mich.
Tellico Extract Co., Tellico Plains, Tenn.
Loxley Lumber Co., Apalachicola, Fla.
U. N. Roberts Co., Davenport, Ia.
J. B. Philhower, Suffolk, Va.
Burton Griffiths & Co., London, Eng.
Thompsonville Woodenware Co., Thompsonville, Mich.
Georgia Supply Co., Savannah, Ga.
Tatum & Bowen, San Francisco.
Charles Fortenbaugh, Baltimore
Camden Machinery & Supply Co., Camden, Ark.
Cherokee Tanning Extract Co., Andrews, N.C.
Waynesburg Pressed Steel Co., Waynesburg, Pa.
J. & T. Jardine, Rexton, New Brunswick.
Harron Rickard & McCone, San Francisco.
Oil City Wood Work Mfg. Co., Oil City, Pa.
Henshaw Bulkley & Co., San Francisco, Cal.
Frank C. White Tool & Supply Co., Cleveland, Ohio.
Peter McLaren, Blairmore, N. W. Ter.
Evansville Hoop Co., Brookport, Ill.
Knox & Reville, Hickox, Ga.
Looschen Piano Case Co., Paterson, N. J.
Tilghman Mfg. Co., Sellers, S. C.
John Coleman, Williamsport, Pa.
Diamond Mills Paper Co., Bloomfield, N. J.
Connell & Dengler Machine Co., Rochester, N.Y.
Edward Brooks, Rochester, N. Y.
Watertown Thermometer Co., Watertown, N.Y.
Standard Box and Lumber Co., Bennett, Pa.
Conley Foil Co., New York, N. Y.
Probst Furniture Co., Pomeroy, O.
Frank S. Harden, McConnellsville, N. Y.
Walsh Mfg. Co., Morehead, Ky.
Eastern Mfg. Co., South Brewer, Maine.
Annis Grain & Lumber Co., North Londonderry, N. H.
Menasha Woodenware Co., Ladysmith, Wis.
Ohio Valley Furniture Co., Manchester, O.
Telford Lumber Co., Prince Albert, N. W. T.
Dennis Bros. Salt & Lumber Co., Manistee, Mich.
J. K. Rishel Furniture Co., Williamsport, Pa.
Schuchardt & Schutte, Berlin, Germany.
O. L. Bartlett, Mound City, Ill.
Tenn. Lumber Mfg. Co., Sutherland, Tenn.
Greenbrier River Lumber Co., Marlinton, W. Va.
R. S. Spiers, Vaughan, N. C.
Cannon Box Co., Geneva, Ill.
Saline Lumber Co., Bienville, La.
Higgston Lumber Co., Higgston, Ga.
American Mfg. & Novelty Co., Erie, Pa.
Davis Wagon Co., Columbus, Ga.
Dennis Bros. Lumber Co., Stronach, Mich.
Tucker File & Cabinet Co., Iliou, N. Y.
Prendergast Lumber & Coal Co., Marion, O.
M. C. R. R. Car Shops, Jackson, Mich.
Dennis Machine Co., Jackson, Mich.
M. Breault, Cohoes, N. Y.
Geo. W. Dana, Camden, N. Y.

Some Customers for B. T. & B. Knife Grinders

- Dow Chemical Co., Midland, Mich.
 Nordyke & Marmon Co., Indianapolis, Ind.
 Badger Box & Lumber Co., Grand Rapids, Wis.
 Hughesville Furniture Co., Hughesville, Pa.
 Capitol Furniture Mfg. Co., Little Rock, Ark.
 Oates Mattress Co., Little Rock, Ark.
 Hornung & Son, Mt. Pleasant, Mich.
 K. C. & Southern Lumber Co., Springfield, Mo.
 Coggins Bros., Igerna, Cal.
 Puget Sound Machinery Depot, Seattle, Wash.
 Montague Mfg. Co., Richmond, Va.
 O. J. Beaudette & Co., Pontiac, Mich.
 Firstbrook Box Co., Penetang, Ont.
 Eland Traffic Co., Eland Jc., Wis.
 K. C. & Southern Lumber Co., Sedgwick, Ark.
 W. S. Lupton, Morral, O.
 Ford Bros., Granere, Pa.
 Southern Brass & Iron Co., Knoxville, Tenn.
 Clark Kizer & Kipp, Cortez, Pa.
 Rexford & Collins, Bristol, Tenn.
 Greaves & Klusman, Cincinnati, O.
 W. P. Mesler & Co., Cobden, Ill.
 German Furniture Co., Middleport, O.
 D. H. Davidson, Philadelphia, Pa.
 National Veneer Co., Charleston, W. Va.
 C. B. Howard & Co., Emporium, Pa.
 J. G. Deering & Son, Biddeford, Me.
 S. M. York, Cleveland, O.
 Covell Mfg. Co., Chicago, Ill.
 New Orleans Ry. and Mill Supply Co., New Orleans, La.
 Harvard Piano Co., Dayton, Ky.
 Metal Bound Package Co., Mound City, Ill.
 Penfield Saw Works, Bristol, Conn.
 Acushnet Sawmill Co., Acushnet, Mass.
 Lake of the Woods Milling Co., Keewatin, Ont.
 Warren Lumber Co., Warren, Pa.
 Oolby Hinkley Co., Alanson, Mich.
 Electric Wheel Co., Quincy, Ill.
 Sussfeld Lorsch & Co., Paris, France.
 Beman & Co., Binghampton, N. Y.
 Vogel Box Co., Leavenworth, Kans.
 F. A. Whitney Carriage Co., Leominster, Mass.
 Porter Screen Mfg. Co., Burlington, Vt.
 Allen Bros. & Co., Sandy Hill, N. Y.
 Pyrites Paper Co., Canton, N. Y.
 Alice Falls Co., Au Sable Chasm, N. Y.
 Rome Box & Lumber Co., Rome, N. Y.
 Post & Henderson, Bensen Mines, N. Y.
 Troy Belting Co., Troy, N. Y.
 Cameron Lumber Co., Harrison, Idaho.
 S. J. Peabody, Columbia City, Ind.
 Ringger & Freiburger, West Hoboken, N. J.
 Frank K. Moore & Co., Boston, Mass.
 Billings Lumber Co., Belvidere Center, Vt.
 Peninsular Mfg. Co., Ann Arbor, Mich.
 A. F. Meckleburg & Co., Milwaukee, Wis.
 J. M. Dennis Lumber Co., Rhoades, Ariz.
 Ernest Ritter, Marked Tree, Ark.
 Sutherland Supply Co., Pottsville, Pa.
 Bardwell Heading Co., Bardwell, Ky.
 Prouty & Miller, Newport, Vt.
 H. D. Williams Cooperage Co., Poplar Bluff, Mo.
 Emerson Smith & Co., Beaver Falls, Pa.
 Brownville Board Co., Brownville, N. Y.
 Paepcke Leicht Lumber Co., Greenville, Miss.
 Elk Rapids Iron Co., Elk Rapids, Mich.
 Knoxville Sawmill Co., Knoxville, Tenn.
 J. J. Green, Freeport, O.
 Gate City Furniture Mfg. Co., Greensboro, N. C.
 Mount Airy Furniture Co., Mount Airy, N. C.
 R. W. Merryman & Co., Marinette, Wis.
 Missoula Mercantile Co., Missoula, Mont.
 Arkell & Douglass, New York.
 Struller Meyer & Julia, New York.
 W. J. Kendall, Jennings, Mont.
 Standard Wood Co., Castorland, N. Y.
 Jones Lumber Co., Williamsburg, Ky.
 J. L. Feaster, Irvine, Ky.
 Crane Co., Chicago, Ill.
 F. Letellier & Co., Grand Rapids, Mich.
 Grand Rapids Show Case Co., Grand Rapids, Mich.
 Grand Rapids Veneered Door Co., Grand Rapids, Mich.
 F. Nichols & Co., Grand Rapids, Mich.
 Fred Macey Co., Grand Rapids, Mich.
 The Dixie Tannery, Bristol, Tenn.
 Fisher & Davis, St. Louis, Mo.
 Cyrwenski & Grant, Winnipeg, Manitoba.
 Hobart M. Cable Co., Chicago, Ill.
 G. W. Willebrands & Bro., Detroit, Mich.
 Fremont Furniture Co., Fremont, O.
 Moscript & Hassell, Idaho Springs, Colo.
 Atwood & Studley, Henniker, N. H.
 Nairn Linoleum Co., Kearney, N. J.
 A. Mark, Greenwich, O.
 Port Clinton Lumber & Coal Co., Port Clinton, O.
 Forest Furniture Co., North Wilkesboro, N. C.
 American Woodworking Machinery Co., N. Y.
 Shaw-Walker Co., Muskegon, Mich.
 J. H. Hayden & Co., Grand Rapids, Mich.
 Garvin Machine Co., N. Y.
 Ironton Door & Mfg. Co., Ironton, O.
 J. R. Raible, Ensley, Ala.
 Fritz & Goedel Mfg. Co., Grand Rapids, Mich.
 Chicago Wheel & Mfg. Co., Chicago, Ill.
 A. C. Norquist & Co., Jamestown, N. Y.
 J. H. Murry & Co., Garland, Ark.
 C. C. Harris, St. Louis, Mo.
 Geo. Wilson & Co., St. Catharines, Ont.
 R. L. Frome, Howard, Wis.
 Geo. S. Bond Co., Charlestown, N. H.
 W. C. Ritchie & Co., Chicago, Ill.
 Turner Vaughn & Taylor Co., Cuyahoga Falls, O.
 J. D. Johnston, Newport, R. I.
 J. A. Porter, Hatley, Wis.
 Wilbur Lumber Co., Waukesha, Wis.
 Bennett & O'Connell Co., Chicago, Ill.
 Warsaw Furniture Co., Warsaw, Ky.

General Remarks on Cup Wheel Knife Grinders

Cup wheel knife grinders have become very popular during late years, in part because with the cup wheel grinder, either a flat bevel or a concave grind on knife may be obtained and in part because they are relatively less expensive not only in original cost of machine, but also in the subsequent cost for wheels, for when the cup part has been worn out, the back of cup may be used on an ordinary bench grinder. The rim speed of a cup is always constant, while the rim speed of a straight faced wheel is constantly lessening as the wheel wears smaller.

Our B. T. & B. Knife Grinders are heavy, well constructed and give excellent satisfaction, meeting successfully the commercial tests calling for machines well adapted to a wide range of use, good values at low prices, practical freedom from complaints and a rapidly increasing demand.

The Bench Grinders are sold principally to small saw mills, or wood-working plants, tanneries, etc., that require a machine at low cost because of a limited amount of grinding. These machines are sold as dry grinders only.

The Column Grinders in 26 and 48 inch capacity are sold with or without automatic water attachments, as desired, although at the advanced cost of \$10 for water attachments, it is well for a customer to have his machine so equipped, even though the attachments are not regularly put to use.

The Extra Heavy 54 to 156 inch capacity Column Grinders are sold for large veneer, planer or paper cutting knives, metal shear blades, etc., used variously in wood, paper, tobacco, leather or metal. All grinders are full automatic in travel of carriage or water attachments, with the crossfeed of knife to wheel accomplished by means of two hand-wheels in connection with a lever and spring device which feeds the knife to emery wheel with an easy pressure that is in effect automatic. However, we manufacture all sizes of the Column Grinders in Style D with an automatic screw crossfeed, the degree of the feed variable as desired and provided with an adjustable stop.

We also market several types and sizes of straight wheel knife grinders and will quote on application.

KNIFE GRINDER OPERATION.

In the operation of knife grinders, regardless of the style or make, difficulties are liable to arise for the removal of which it is hoped the suggestions below will prove helpful.

It will never happen that 100 machines, no matter for what purpose or who the maker, when sold to 100 different customers, will all work in an equally satisfactory manner, because of the difference in conditions or in the skill of the operators. The machine must be set up perfectly level, and firmly bolted down to a floor that is free from vibration. All bearings, slides, gears, etc., must be well lubricated and always kept so, and utmost care must be exercised to keep the emery dust and fine particles of steel out of the bearings or slides.

All these are requirements too commonly known to deserve mention were it not a fact that there are concerns that attempt to run grinding machinery without regard to any of these requirements. Start right if you wish to avoid subsequent trouble. If the machine then fails to work properly report the matter to the maker, describing the conditions and results in the fullest manner possible.

SETTING UP KNIFE GRINDERS.

Our Bench Knife Grinders must be erected on a substantial wooden bench about 18 inches high, 36 inches wide, and respectively 52, 55 or 58 inches long for a 26, 32 or 38-inch machine. All Column Knife Grinders are mounted on the floor and all machines from 32 to 156-inch capacity should have the standards or posts properly adjusted at all times, for support of knife holder bed.

SPEED OF MACHINE.

The tight and loose pulleys on bench grinders are $4\frac{1}{2}$ inch diameter, $3\frac{1}{2}$ inch face, and should run about 1400 revolutions; on 26 to 48 column grinders, are $4\frac{1}{2}$ inch diameter, 3 inch face and should run about 1200 revolutions; on 54 to 156 column grinders are 5 inch diameter, 4 inch face and should run about 1000 revolutions. These speeds are not arbitrary, but are subject to the well known rule that soft wheels should be run faster and hard wheels slower when not working well at existing speed, and there are probably instances where the several speeds above given ought to be varied from 100 to 300 revolutions faster or slower. Watch carefully the cutting and lasting properties of the emery wheel, when at work, and speed the wheel to secure the best results.

General Remarks on Cup Wheel Knife Grinders

ATTENTION TO KNIFE.

Have face of knife and knife bar perfectly free from gum, dirt or other matter before bolting down. Tighten to an easy degree but do not strain on bolts more than necessary to bring knife tight to bar; when knife is about half ground, slacken bolts that hold the knife, except one, then immediately tighten and finish grinding. If this is done you are unlikely to have crooked knives. All ordinary grinding, such as planer, stave or veneer knives, may be ground dry on any of our machines if machine is properly speeded to suit the wheel, but the use of water on the work is a desirable safeguard against heating. Knives may be injured or even ruined by the action of a poor wheel overheating the edge, which results in short cracks running parallel to edge and generally taking a curve out to edge, such cracks showing at from $\frac{1}{8}$ to $\frac{1}{4}$ inch inward. The knife will sometimes be left soft and sometimes casehardened as a result of improper grinding. There are some very hard knives, whose temper can be drawn enough to seriously injure them, if not ruin them, and yet no color will be shown. Use no more bevel than necessary, for a long bevel on a thin knife weakens the cutting edge, and is more difficult to grind without injury. Never allow the face of knives to become rusty. A little solution of washing soda added to the water will prevent rust.

THE EMERY WHEEL.

The wheels that we supply for our knife grinders are made in large lots expressly to our order, by leading manufacturers, and in grain and grade and cutting qualities are believed to be as good as can be obtained. However, it is not impossible for emery wheels made in the same lot, to be variable in quality or for an occasional wheel to prove poor, by reason of being unduly hard or soft, or disposed to glaze. An undue softness or hardness of wheel can usually be overcome by increasing or diminishing speed; but a tendency to glaze is more difficult to overcome, and if the use of wheel is continued this must be done with extreme caution, for you are liable to heat and spoil the work, grind out of straight because the knife holder tends to spring away from the wheel or because the wheel takes hold and grinds unduly at some point. The efficiency of a grinder depends largely on the cutting qualities of the wheel, which can be demonstrated only when put to actual use by each customer. A hard wheel may usually be recognized by not cutting fast enough, tending to clog, overheat the knife and make it soft on edge. Try a slower speed. A soft wheel wears away rapidly, causes an undue amount of dust if run dry, and while it will probably not injure the knife, it will prove unduly expensive by reason of rapid wear. Try a faster speed.

REVERSING OF CARRIAGE.

Every knife grinder is given a running test before being crated for shipment, the carriage for knife being set in this test at right angles to emery wheel spindle as required for flat beveling, the belt shifters and reversing levers being properly set to act perfectly. For greater safety in transit, the bed and knife holder are removed from the column, and rigidly crated with bearings their entire length to prevent their being sprung. When bolting the bed of carriage to column, avoid disarranging the two shifting levers at top of column. The longer lever should always be set at right angles to emery wheel spindle, regardless of whether the grind on knife is to be flat or concave. The short shifting lever should always be set at right angles to knife holder, whether traveling at right angles or obliquely to emery wheel spindle. The shifters for belts should always be set so that the two belts will come just flush with outside edges of tight pulley. If any difficulty is met with in reversing carriage when machine is at work, correct whichever of these adjustments is out of order. Non-shifting of belts may arise from the machine not being speeded fast enough. The belt shifters can be set instantly to any desired position on the shifting rod, by merely slacking one screw. See to it that the collars on the end of shifting rod, inside the column, are set with respect to the shifting lever, so that there shall be no lost motion.

USE OF WATER.

While it is true that a good emery wheel properly speeded will grind satisfactorily run dry, it is still desirable to have a knife grinder equipped with automatic water attachments, as a means for preventing dust and undue heating of work. The water attachments can be instantly disconnected if desired. The stream of water flowing on the work at point of contact with the wheel, may be varied at will and the water is returned to tank by gravity, thus keeping up a continuous circulation. The emery wheel is hooded as effectively as pos-

General Ramarks on Cup Wheel Knife Grinders

sible to prevent overthrow or waste of water. Sawdust on the floor at base of machine will absorb any water that escapes. The water must be renewed from time to time and the tank kept free from sediment. Customers who order a grinder without water attachments can obtain these later if desired. Orders for emery wheels should always specify whether the wheel is to run wet or dry.

OIL OR GREASE.

It is imperative that all boxes, slides and gears shall be kept properly lubricated, with caps on oil cups, and oil wells plugged to prevent emery dust getting into the bearings. Remember that there is no known way to make gears last if allowed to run dry. Keep the machine at all times clean and in good order. Keep wheel free from oil.

BELTING.

All B. T. & B. Grinders are furnished with internal belting, and equipped with tight and loose drive pulleys for overhead belting. On special order, at a small additional price, we will furnish machines with lengthened arbor and an outside bearing, as a means for belting from below.

GRINDING OUT OF STRAIGHT.

If the knife is not ground straight, it may be because the crossfeed is too fast, such that the knife holder springs away from the work at end of stroke, while the central portion of knife stands up to the wheel and is ground unduly, or because the machine is not properly leveled and the end supports of bed in proper position to prevent a downward spring of bed when knife carriage is at end of stroke or because the wheel itself is defective.

FLAT OR CONCAVE BEVELS.

On all sizes of B. T. & B. Knife Grinders, the bed and carriage for knife may be set at right angles to emery wheel spindle for flat beveling or obliquely for concave grinding, in which case the edge of knife contacts with corner of wheel instead of the flat end, and the corner of wheel may be rounded to afford the concave grind. But in changing the knife carriage from one position to the other, do not fail to reset the short shifting lever at right angles with knife holder.

Our Grinders in styles A, B, C, and E are equipped with lever and spring crossfeed, in effect automatic, although not strictly so, the edge of knife being presented to wheel with an easy pressure, according to adjustment of tension in spring. The crossfeed is also regulated by the two hand wheels at end of knife holder. Our Style D Grinders are equipped with an automatic screw crossfeed, variable in degree from about 1-10000 to 8-10000 inch to a round trip of slide, thus affording a large range in the degree of the crossfeed to suit the work or wheel or time available. The Style D Grinders are also equipped with an adjustable stop for the grind and with a reversible knife bar, operated by worm and gear device, as illustrated. We make knife bars in a number of styles, and will endeavor to meet any requirement. Wishes of customers in the way of special construction will be complied with, if possible.

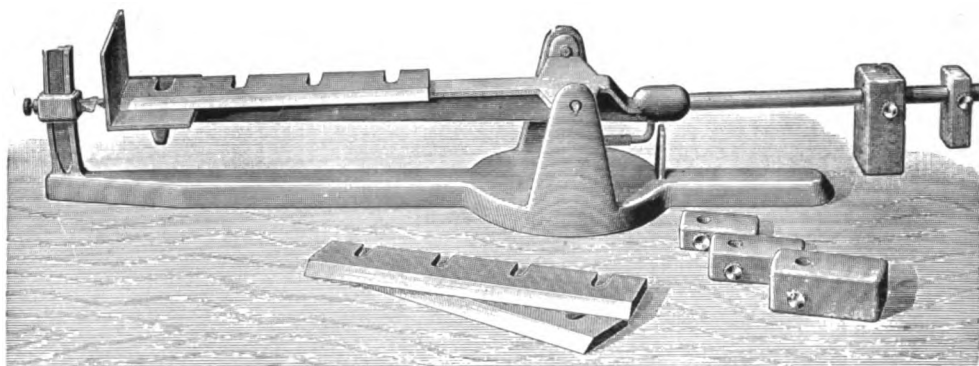
NEW CUP WHEELS.

We advise users of B. T. & B. Knife Grinders to buy their extra wheels from us.

Our stock of cup wheels in the several sizes required for our different machines is large and varied, comprising the standard makes, all made up expressly to our order. If you wish to obtain wheels promptly, of approved grain, grade and correct size, send us your orders, and state whether to be used for dry or wet grinding.

B. T. & B. MANUAL.

The new B. T. & B. 144 page Manual on Saw and Knife Fitting mailed postpaid for \$2; helpful to experts, invaluable to beginners.



Patent Proportional Knife Balancing Machine.

No. 101 to balance knives up to 36-in. long, **\$15.**

Export Shipping Weight 50 pounds.

Net Weight, 37 pounds.

Cubic Measurement, 2 feet.

Code word, Balance.

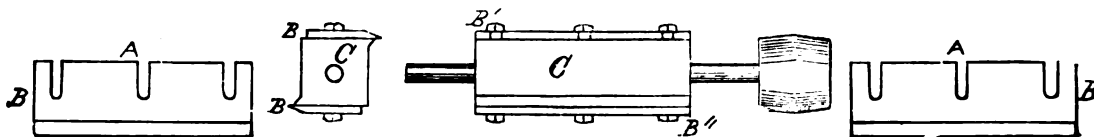
No. 102 to balance knives up to 48-in. long, **\$40.**

Export Shipping Weight, 170 pounds.

Net Weight, 130 pounds.

Cubic Measurement, 6 feet.

Code word, Balancing.



THE above engraving represents one of the most perfect machines yet produced for perfectly balancing moulding knives, planer knives, revolving cutters of every shape, knife screws, etc.

This machine is too well known to the users of machine knives to require a lengthy description. Within the past three years nearly 5,000 have been sold.

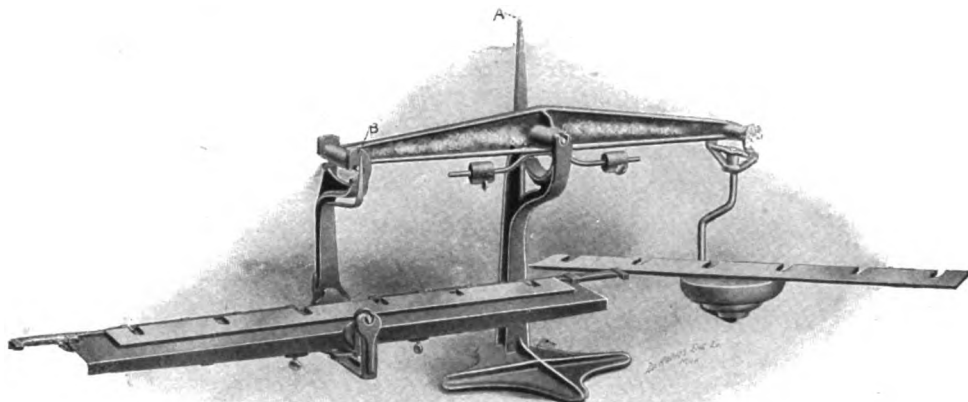
In describing its use, let AA, Fig. 1, represent two knives, which are to be fastened onto the cutterhead C. Let it be supposed the knives are of the same specific weight, but that there is an excess of weight at the opposite ends, BB; then, when revolving on the head they will cause a violent jarring or "throwing" by reason of the excess at B' and B". The knives could be reduced to the same specific weight by the aid of a common grocers' scales, but that would not attain the object; by the use of the Proportional Balancing Machine the position, as well as the amount of excess of weight, can be ascertained, so that in reducing the knives to the same specific weight they may be made to agree in their corresponding parts. The method hitherto used is by reducing pairs or sets of knives to the same dimensions and by aid of common scales to the same specific weight; but so great are the differences in the density of the parts of even the same knife, that a still running set of knives is but an accidental result.

In operating, let it be supposed that two or more knives are intended to be fastened onto one cutterhead, rotating, at a high velocity, and that it be conceded that they must not only be of the same specific weight, but must agree in their corresponding parts. Place each knife in succession on the platform of the Balancing Machine, with its face toward the end-board with a suitable weight at the opposite end of the beam; if by this test they all appear to be of the same specific weight, place them each in succession again, with their backs against the end-board; they may still appear to be of the same specific weight; place them each in succession flatwise on the platform, in as many different positions as of which they are susceptible, noting and reducing by an indefinite number of trials the edges which are found to be of excessive weight, until they all are reduced to the same weight in their corresponding parts. They will also then, of course, be of the same specific weight. The balance weights are made oblong, so that by putting the heavy end up, the entire mass, consisting of weight, beam and knife, may be poised near its center of gravity, and thereby oscillate more sensitively. If, however, the object to be balanced be very heavy, the weight must hang down, or the upper portion of the mass may preponderate. It will be seen that the operator can make the poise more or less delicate, according to the varied positions of the knives to be balanced.

10 per cent. advance for boxing and delivery f. o. b. cars New York for export.

The Only Balancer that will Balance Endways and Total Weight at Same Time

It Saves Time, Labor, Repairs, Knives, Machines, Money.



No. 104, Proportional Balance Scale \$20. Capacity 41-inch Knives.

Boxed 12x12x37 inch.

Weight, 150 lbs. boxed.

Code word, Balanced.

No. 104A \$25. Capacity 60-inch Knives.

Slides "C" "C" will instantly and correctly center any knife from 41 inches down and slides move but 3 inches.

Pointer "A" will show if one knife is heavier than the other.

Pointer "B" will show if one end of the knife is heavier than the other and indicate which end. For a correct balance both of the errors must be corrected.

Will do its work from one-third to one-tenth the time of any other balance.

This machine will balance planer knives **ENDWAYS**, at the **SAME TIME** balancing the **TOTAL WEIGHT**, and thus speedily obtaining a perfect balance; a thing rarely or never accomplished in any scales formerly in use. The necessity of having the ends in balance is appreciated by all good mechanics, and is essential for safety, good work, and the preservation of the machine. For years machines have been sped higher and higher, and demand more perfect balancing of knives. In using the **PROPORTIONAL BALANCE SCALE** draw the slides "C" "C" apart, then place the largest knife in the center of tilting platform, push the slides "C" "C" together, and it instantly centers the knife. Then tighten thumb screw on the back and they will remain in the same position, and will need no further attention. The slides "C" "C" are inversely connected, and instantly and correctly center any knife from 41 inches down, and the slides do not move over three inches. The pointer "B" indicates the heavy end, how much variation there is. Correct this and then place this knife on the tilting platform. Pointer "A" shows how much heavier this knife is than the other, and pointer "B" shows where the additional weight is located. If "B" indicates one end heavier than the other, reduce that end until "B" is in the center, then reduce evenly until "A" indicates correctly. If there are three or four knives in set, proceed the same as with second knife. It is a very exceptional case when it will be necessary to go over the knife a second time. Place the knife on the platform as shown in the cut, and always place every knife the same way. Knives should be of exact length, and work from left end; i. e., place the left end of knife in same place on the platform, and then on cylinder. Line them from same end. These machines are as sensitive as a druggists' scales, are simple, all parts are accurately balanced, all the bearings are of hardened steel, and other parts of machine are made of steel, malleable or cast iron, as the case demands.

10 per cent. advance in price for boxing and delivery f. o. b. cars New York.



PLANER KNIVES

ORDER KNIVES OF US FOR ANY KIND OF MACHINE FOR
WOODWORKING AND GET THE BEST KNIVES MADE

PLANER KNIVES

SHINGLE KNIVES

JOINTER KNIVES

STAVE JOINTING KNIVES

VENEER KNIVES

MOULDING KNIVES

PAPER KNIVES

HOG KNIVES

BARKER KNIVES

DOCTOR BLADES

METAL SHEARS

BITS, Etc., Etc.

The Munson Proportional Balancing Scale

WHAT CUSTOMERS THINK OF IT

WIDDICOMB FURNITURE CO., GRAND RAPIDS, MICH.—We have one of your planer knife balance scales which we substituted for the ordinary scale we had in use for several years, for your device accomplishes the balancing of planer knives so accurately that it was, in the writer's opinion, an indispensable part of our machinery equipment, and we threw out the old scale, purchasing the new one from you.

BERKEY & GAY FURNITURE CO., GRAND RAPIDS, MICH.—With pleasure we advise you that your balancing scales are doing very satisfactory work for us. We find them to be very accurate and time saving.

OWOSSO CASKET WORKS, OWOSSO, MICH.—The Proportional Balance Scale purchased of you is giving the best of satisfaction. It is a great convenience and we could not afford to do without it.

THE ORINOCO FURNITURE CO., COLUMBUS, IND.—Regarding the Proportional Balance Scale we have, am pleased to state that it has given entire satisfaction, and I think it is indispensable in balancing planer knives for doing smooth and accurate work. Wishing you success, etc.

A FEW CUSTOMERS.

Grand Rapids Refrigerator Co., Grand Rapids, Mich.

Stickley Bros. Co., Grand Rapids, Mich.

John Widdicomb, Grand Rapids, Mich.

Haney School Furniture Co., Grand Rapids, Mich.

Brown Lumber Co., Massillon, O.

Porter Screen Mfg. Co., Burlington, Vt.

Standard Cabinet Co., Dowagiac, Mich.

J. J. White, McComb City, Mich.

Woodard Furniture Co., Owosso, Mich.

Compensating Pipe Organ Co., Battle Creek, Mich.

Marble Shaddock Chair Co., Glennville, O.

Pine Lumber Co., Mish, Miss.

J. M. Skinner Bending Co., Toledo, O.

Fitzgerald Speer & Co., Pen Argyle, Pa.

Charlotte Mfg. Co., Charlotte, Mich.

Sheboygan Chair Co., Sheboygan, Wis.

Yawman Erbe Mfg. Co., Rochester, N. Y.

Ballman Cummings Furniture Co., Fort Smith, Ark.

Marietta Chair Co., Marietta, Ga.

Bailey Lebbey Co., Charleston, S. C.

J. O. Batey Saw & Supply Co., Manistee, Mich.

Dowd Knife Works, Beloit, Wis.

John W. Gainey, St. Louis, Mo.

Gibbons & Stream, New Orleans, La.

Milner & Kettig Co., Birmingham, Ala.

Mallory Mill Supply Co., Macon, Ga.

Packard Machinery Co., Milwaukee, Wis.

Simonds Saw Co., San Francisco, Cal.

Simonds Mfg. Co., Chicago, Ill.

F. E. Slatterlee Co., Minneapolis, Minn.

Southern Supply Co., Mobile, Ala.

Strong, Carlisle & Hammond Co., Cleveland, O.

B. T. & B.

$\frac{1}{8}$ to 3 inch

Narrow Band Saw Tools

FILERS, SETTERS, BRAZERS,
VISES, SAW RESTS, ETC.

PROMINENT FEATURES:

WEIGHT RIGIDITY
STRENGTH WORKMANSHIP
AUTOMATIC
EFFICIENT
VALUE ASSURED

EXTENSIVELY
SOLD AND
HIGHLY
SATISFACTORY

NO WATER IN
THE PRICE LISTS
FULLY TESTED
AND EQUIPPED

Baldwin, Tuthill & Bolton

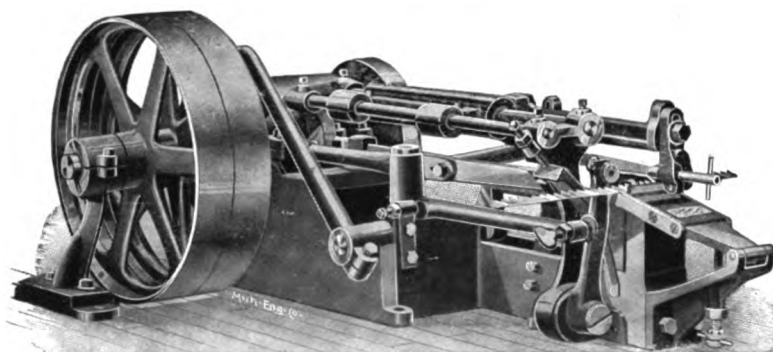
Sole Makers

GRAND RAPIDS, MICHIGAN, U. S. A.

Filing Room Outfits for All Purposes

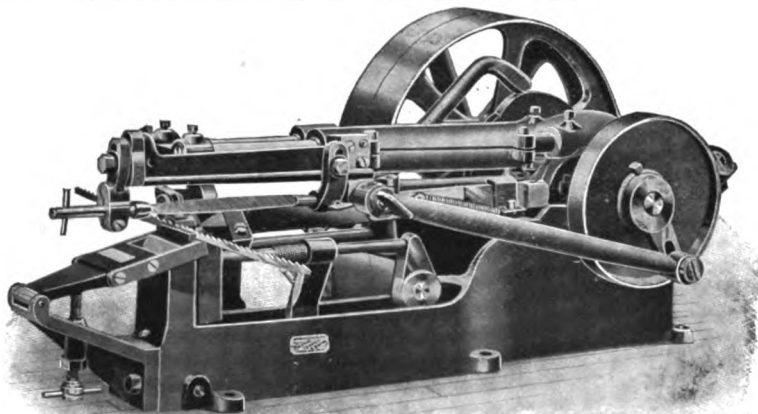
200 Page Catalogue Free

144 Page Manual on Saw and Knife Fitting, Postpaid, \$2.00



**Bolton
Improved
Automatic
Band Saw
Filer**

—
1902 Pattern

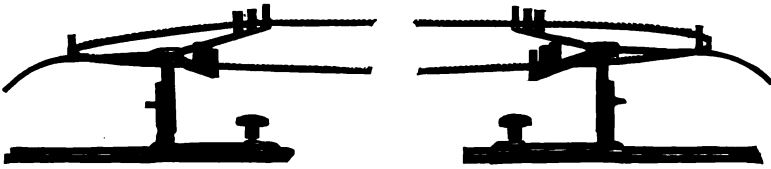


No. 40	For Saws $\frac{1}{8}$ to 1 Inch Wide, Spacing $\frac{1}{2}$ inch or Less.....	\$50.
No. 40A	For Saws $\frac{1}{8}$ to 2 Inch Wide, Spacing $\frac{1}{2}$ inch or Less.....	55.
No. 49B	For Saws $\frac{1}{8}$ to 3 Inch Wide, Spacing $\frac{1}{2}$ inch or Less.....	60.

The Bolton Band Saw Filer has been manufactured since 1897, with added improvements from time to time that have been demonstrated by practical every day use on a great variety of saws to be desirable, and we now offer these machines as representative of the very best to be had in completeness and efficiency, as well as in material and labor costs and general intrinsic value. Our sale of these machines has resulted in such uniform satisfaction to our numerous customers that we consider that there can be no question of one of these machines giving satisfaction, unless ordered for saws for which it is in no way adapted, and we expressly request each customer to give us full information regarding the range in width and spacing of the saws to be fitted that we may avoid filling the order if there is any question of its adaptation.

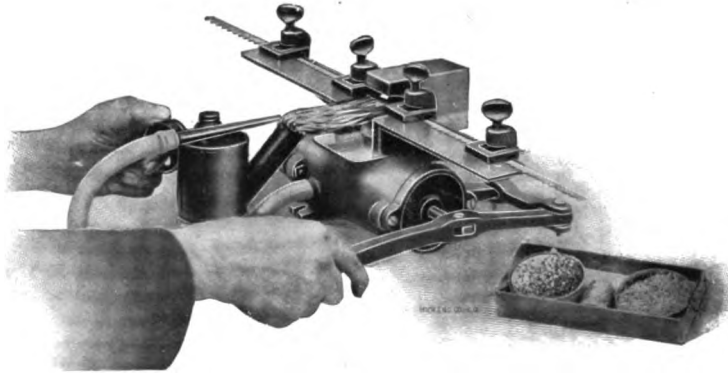
DIRECTIONS FOR FILING MACHINE.

Support saw on pegs, racks or pulleys—in latter case loosely strained to avoid being given any momentum when feeding ahead. Every machine is adjusted to a saw and tested before shipment and will go forward adjusted to any spacing or width of saw as customer directs. We regularly adjust to a 20-gauge saw and readjustment of clamping device is rarely necessary unless saw is more than one gauge heavier or lighter. Adjust saw rest for back of saw so that bottom of gullets of teeth extend about 1-32 inch above top of clamps. Adjust and time the cam that controls clamping lever to clamp instantly after pawl reaches end of forward movement. Clamp saw according to its gauge, snug, but not too tight. The pawl must always push the tooth next to be filed, and as the pawl rides on an adjustable steel shoe, which can be set forward or backward at will, it can readily be made to feed the proper tooth and ride over those behind this tooth, regardless of spacing. The stroke of pawl is adjustable but requires little attention, except to see that the end of forward stroke is right to suit the position of file when in position for filing tooth. To feed tooth farther ahead turn adjusting screw in pawl lever inward, and outward for opposite effect. The file holders are adjustable vertically and the front holder laterally, and it is regular practice to adjust file to take maximum cut at front end of file. File may be rolled to any angle desired, but in readjusting or changing files see that the pawl feeds saw ahead to suit the cutting edge of file. The machine is readily adjustable to varying requirements and will give satisfaction for saws properly within its capacity. Accompany order with statement as to range in width and spacing and on what you want it adjusted before shipment.



SUPPORTS OR RACKS FOR BAND SAWS.—\$8.

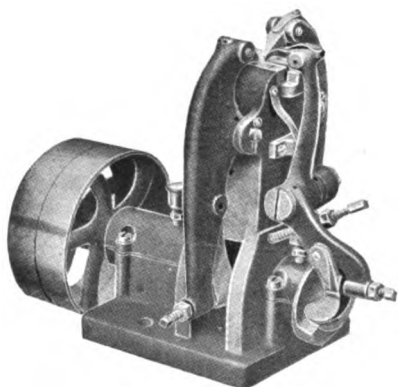
THESE SUPPORTS or Racks are designed for use with Band Filer or Setter and are considered superior to pulleys, there being no resistance to movement of saw and no momentum given saw, as may result from the rapid movements of pawl in feeding a saw strained on a set of wheels. The racks are adjustable vertically or horizontally, to suit varying widths and lengths of saws. It is imperative that whatever device is used to support a saw to a band filer or setter shall permit of a free and uniform feeding of the saw, with no liability of the saw being carried too far or not far enough.

NO. 84 BAND SAW BRAZER, $\frac{1}{8}$ TO $1\frac{1}{2}$ INCH.—\$10.

Boxed, 7 x 7 x 16 inches. 14 lbs. Code Word. Brazier.

WITH THIS DEVICE band saw brazing is neither an expensive nor difficult operation, for an inexperienced person can file the laps, braze the saw and dress the joint in from five to ten minutes. It is so designed that one casting answers the purpose of a scarfing frame, brazing clamp and air pump, and all that is necessary to complete the outfit is an ordinary flat file. With each Brazer we furnish enough wire and spelter to last an ordinary factory two years. While the Brazer has a capacity for saws up to $1\frac{1}{2}$ inches wide, we recommend the use of a regular brazing clamp and irons as more efficient for saws exceeding 1 inch in width. File laps on the right hand end of clamp, making about a $\frac{3}{8}$ -inch lap for saws up to $\frac{3}{4}$ -inch wide, $\frac{1}{2}$ -inch for saws up to $1\frac{1}{2}$ inches wide. File nearly to a knife edge. Place the saw in frame, with the laps in center of opening in frame, and in placing the laps together allow a very little in matching the teeth for the expansion of the teeth when hot. Wind the lap firmly, especially the ends, with a piece of steel wire, and under the last turn of the wire place a small amount of the spelter or solder. Put on plenty of powdered borax, place the block of wood back of the saw, leaving a space for the fire to go around the saw.

A small block of wood opposite the flame should be used, as it aids in holding the heat. Use kerosene oil in the lamp. See that the lamp wick is smooth on top and a little lower than the blow pipe; light the lamp and holding it three or four inches from the saw, pump the blast on the saw until the solder flows freely. Then blow out the fire, remove the block and pump cold air on the joint. File off the surplus solder between the clamps on either side of the flame. ALWAYS USE THE LUMP BORAX, powdering it as you use it, and dampen it before using it. The device is efficient and successful for the purpose and secures a perfect weld and a straight saw.

NARROW BAND SAW SETTERS

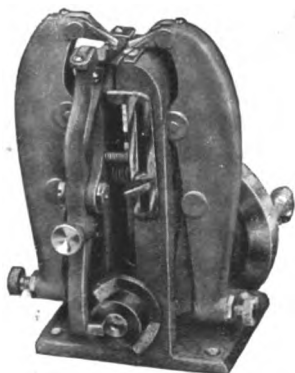
No. 83A. Bolton Automatic Power Band Hack or Meat Saw Setter, \$40.

Approx. Weight
50 lbs.

Pulley
6 x 1¼ inch, 50 to 100 rev.

Floor Space
10 x 14 x 17 inches.

Code Word
Powset.

THE BOLTON AUTOMATIC HAND BAND SAW SETTER.

(Sold with unqualified warranty.) Code.

No. 82. Setter for saws ¼ to 1 inch wide. Price \$15 set

No. 83. Setter for saws ¼ to 3 inch wide. Price \$20 set

OPERATED BY HAND WHEEL.

Weight Boxed, 15 and 20 lbs.

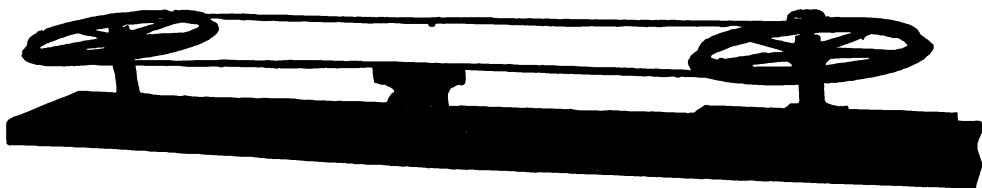
For Saws ¼ in. Wide, with Teeth Spaced Not to Exceed 1¼ in. From Point to Point.

This power setting machine has been produced to meet a demand coming from saw makers or woodworking plants who have a large amount of setting to perform daily and who require a rapid working, well built and lasting machine for this service. It is being used at a speed of 200 teeth per minute, although we would not recommend that it be run in general practice so rapidly, and if a speed of 50 to 75 teeth per minute be rapid enough for actual requirements it should be so run.

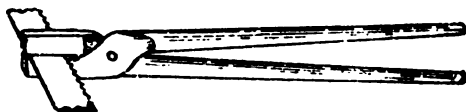
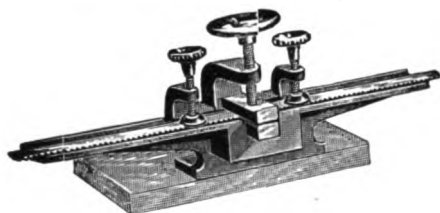
A band saw once set with this machine will be true and uniform with respect to the spread of the teeth and each tooth will perform its proportional part of the cutting, thus securing good work with the least possible strain on any part of the saw; with economy in the wear of the saw, in the amount of the kerf, and with smooth surfaced stock resulting. Using our setter and filer, every tooth is bound to be treated exactly alike. The machines are used in a manner so that there is no shifting of the saw from one place to another, the saw when once placed on the pulleys not being removed until it is a finished blade ready for work. This economizes time, space and labor. One revolution of pulley or crank feeds and sets

two teeth, one to the right and the other to the left, the feedfinger acting on the tooth being set. All these movements are automatic and rapid. The machine gives its blow in such a manner that the tooth stays where set, and as the force of the blow can be instantly regulated by thumb screw at lower end of setting lever it is readily adapted to heavy or light blades and to various grades of temper. The blade travels in a channel formed by the saw vise, guide for back and the tooth guide, all of which are adjustable to various widths and gauges. The feed and setting mechanism are strong and powerful, the pawl and hammers being made of finest steel and properly hardened. There are take-ups for wear, and when necessary any part can be cheaply replaced. The pawl and hammers can be removed for grinding when worn, or replaced by duplicates. It has been found perfectly suited to all work within its capacity, giving entire satisfaction. The setters are adapted to teeth spaced from ¼ to ¾ inch between points. No. 83 furnished on order for teeth up to 1¼ inch spacing.

10 Per Cent. Advance on Price for Boxing and Delivery at New York for Export.



- No. 87.** Bolton 8-inch Steel Jawed Band Filing Vise..... \$ 8.00
No. 88. Pair 18-inch Wheels..... 10.00
No. 25. Bolton 36 inch Filing Clamps, 2-7 inch saws, 100 lbs (Not illustrated)..... 15.00
No. 26. Bolton 42-inch Filing Clamps, 2-10 inch saws, 150 lbs (Not illustrated) 20.00



BRAZING TONGS.

- No. 89** Bolton 3-inch Brazing Clamp with irons.....\$10.00
 Boxed, 7x11x22 in., 31 lbs. Code word Brazable.

For 2-inch Saws\$2.00

BAND SAW GUIDES.

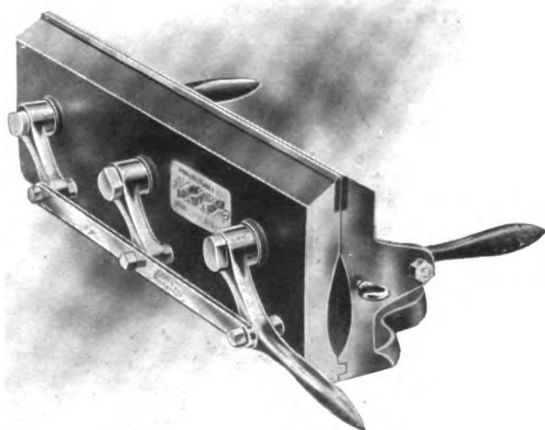
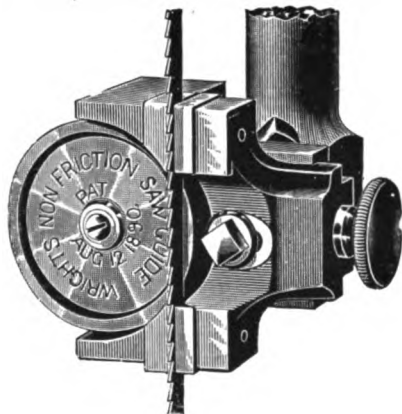
- No. 143,** $\frac{1}{8}$ to 1 in....\$ 8 **No. 145,** $\frac{1}{8}$ to 2 $\frac{1}{2}$ in...\$15
No. 144, $\frac{1}{8}$ to 1 $\frac{1}{2}$ in.. 10 **No. 146,** 1 to 5 in ... 25

Warranted. Sent on Trial.

ANSWER THE FOLLOWING:

- Band Saw Machine in use?
 Distance from post to saw?
 Diameter of post?
 Shape of post?
 Shape of hole in post?
 Size of hole in post?
 How wide saws used?

For Under Guides give distance from back of saw to casting and send us a rough sketch of how your old guide is applied.



- No. 87A** 20 Inch Steel Jawed Band Saw Filing Vise, \$12.
 For saws 1-8 to 2 $\frac{1}{2}$ inches wide, weight 70 lbs., crated. Clamps instantly and perfectly, the best yet. Price very low for the size, weight and efficiency of the tool.

Some Customers for Bolton Band Filers and Setters.

Garton Toy Co., Fond du Lac, Wis.
 Chesley Chair Co., Chesley, Ont.
 Gurney Refrigerator Co., Fond du Lac, Wis.
 The Pease Co., Cincinnati, O.
 Smith, Courtney Co., Richmond, Va.
 Hill, Clarke & Co., Chicago, Ill.
 Brumby Chair Co., Marietta, Ga.
 United States Furniture Co., Evansville, Ind.
 W. M. Jernigan & Co., Pembroke, Ky.
 Novelty Furniture Co., Evansville, Ind.
 David Becker, Evansville, Ind.
 O. L. Packard Machinery Co., Milwaukee, Wis.
 Christianson Engineering Co., Milwaukee, Wis.
 New York Central Car Shops, West Albany, N. Y.
 Tennessee Furniture Co., Memphis, Tenn.
 Stoltz, Schmitt Furniture Co., Evansville, Ind.
 California Saw Works, San Francisco.
 Memphis Furniture Mfg. Co., Memphis, Tenn.
 Bessemer Foundry & Machine Co., Bessemer, Ala.
 Warren Table Works, Warren, Pa.
 W. B. Barry Saw & Supply Co., Indianapolis, Ind.
 Webster Mfg. Co., South Superior, Wis.
 National Saw Co., Newark, N. J.
 Vinton & Co., Detroit, Mich.
 Michigan Toy & Novelty Co., Holland, Mich.
 Haskell & Barker Car Co., Michigan City, Ind.
 P. Pryibit, New York.
 F. H. Clement Co., Rochester, N. Y.
 J. A. Fay & Egan Co., Cincinnati, O.
 Nicollette Lumber Co., Nicollette, W. Va.
 Toledo Machine & Tool Co., Toledo, O.
 H. A. Rogers, New York.
 M. E. Harroun, Flint, Mich.
 Keith, Simmons & Co. Nashville, Tenn.
 Thomas Organ & Piano Co., Woodstock, Ont.
 A. Wilburt's Sons Lumber & Shingle Co., Plaquemine, La.
 Oscar Goes & Co., Chicago, Ill.
 Kenosha Crib Co., Kenosha, Wis.
 Lee Chair Co., Canastota, N. Y.
 Maddox Table Co., Jamestown, N. Y.
 Conewango Desk & Table Co., Warren, Pa.
 Morley Bros., Saginaw, Mich.
 James T. Young, Watervleit, N. Y.
 Minneapolis Furniture Co., Minneapolis, Minn.
 Appleton Chair Co., Appleton, Wis.
 C. H. Mears & Co., Chicago, Ill.
 N. O. Nelson Mfg. Co., Edwardsville, Ill.
 Detroit Cabinet Co., Detroit, Mich.
 Upjohn Mfg. Co., Hastings, Mich.
 Dubois County Lumber Co., Bowling Green, Ky.
 H. D. Langton, Black Rock, Ark.
 Carolina Furniture Co., Durham, N. C.
 Hugo Kleinick, Newark, N. J.
 Dodge Mfg. Co., Toronto, Ont.
 Richmond Woodworking Co., Manchester, Vt.
 R. Holman & Co., Boston, Mass.
 Sanford Furniture Mfg. Co., Sanford, N. C.
 Mineola Furniture Works, Mineola, Tex.
 H. Hughes Store Co., Montgomery, Pa.
 Sweat, Comings & Co., Richmond, Vt.
 Patterson Tool & Supply Co., Dayton, O.
 Nappanee Furniture Co., Nappanee, Ind.
 Mosle Bros., New York.
 Tatum & Bowen, Portland, Ore.
 Covell Mfg. Co., Chicago, Ill.
 C. F. Hildebrand & Co., Galveston, Tex.
 W. M. Tilley & Co., Berkley, Va.
 Savage & Love Co., Rockford, Ill.
 Delaware Hard Fibre Co., Wilmington, Del.
 H. C. Dexter Chair Co., Black River, N. Y.
 G. W. Willebrands & Bro., Detroit, Mich.
 Sheboygan Mfg. Co., Sheboygan, Wis.
 John Drebele, Kendallville, Ind.
 Elkhart Lumber & Planning Mill Co., Elkhart, Ind.
 Birdsall Mfg. Co., South Bend, Ind.
 Henry Disston & Sons., Louisville, Ky.
 Shaw Electric Crane Co., Muskegon, Mich.
 Cornish & Co., Washington, N. J.
 Cordesman, Meyer & Co., Cincinnati, O.
 American Woodworking Machine Co., New York.
 Knoxville Furniture Co., Knoxville, Tenn.
 MacPherson & Schell, Alexandria, Ont.
 Youngsville Mfg. Co., Youngsville, Pa.
 Zanesville Mantel & Furniture Co., Zanesville, O.
 J. H. Obermeyer, Nessen City, Mich.
 Ottawa Furniture Co., Holland, Mich.
 Chas. E. Wright Co., Waterbury, Conn.
 Russell & Co., Massillon, O.
 Muskingum Coffin Co., Zanesville, O.
 Black Rock Machine Shop, Black Rock, Ark.
 C. A. Hiles & Co., Chicago, Ill.
 Cameron Lumber Co., Central Lake, Mich.
 W. J. Oakes, Columbia City, Tenn.
 Thomas H. Reeves, Minneapolis, Minn.
 James T. Young, Watervleit, N. Y.
 H. P. Hughes & Co., Chicago, Ill.
 F. W. Keller & Sons, Milwaukee, Wis.
 Kates & Bok, New York.
 J. M. Deutsch & Co., Hornellsville, N. Y.
 J. D. Stringer & Bro., Bono, Ark.
 Allen Mfg. Co., Chicago, Ill.
 American Chair Mfg. Co., Brandt, Pa.
 F. E. Satterlee & Co., Minneapolis, Minn.
 Branch Saw Co., St. Louis, Mo.
 Royal American Enamel Co., Jersey City, N. J.
 Michigan Art Carving Co., Grand Rapids.
 John Stengel & Co., Dayton, O.
 Bailey, Jones & Co., Jamestown, N. Y.
 Textile Machine Works, Reading, Pa.
 Saginaw Mfg. Co., Saginaw, Mich.
 E. C. Atkins & Co., Indianapolis, Ind.
 J. S. MacLean, Columbus, O.
 Oak Duke Lumber Co., Wellsville, N. Y.
 Wickes Bros., Saginaw, Mich.
 J. B. Galloway, Clarendon, Ark.
 Sussfeld, Lorsch & Co., New York.
 Union Saw Mfg. Co., Camden, N. J.
 American Saw Mfg. Co., Camden, N. J.
 Empire Saw Co., Albany, N. Y.
 John Waldron, New Brunswick, N. J.
 Globe Iron Works, New York.
 Phenix Chair Co., Sheboygan, Wis.
 J. R. Parrott, Blacksburg, Va.
 Pallister Bros., Detroit, Mich.
 Paine Lumber Co., Oshkosh, Wis.
 McVay & Walker, Braddock, Pa.
 Owensboro Wagon Co., Owensboro, Ky.
 W. H. Mullins, Salem, O.
 O. J. Beaudette & Co., Pontiac, Mich.
 E. L. Thompson & Co., Baldwinville, Mass.
 Crump Mfg. Co., Bay City, Mich.
 Jennison Hardware Co., Bay City, Mich.
 H. Closterman, Cincinnati, O.
 Keck, Gonnerman & Co., Mt. Vernon, Ind.
 Rock Island Sash & Door Works, Rock Island, Ill.
 Marstall Furniture Co., Henderson, Ky.
 Forest City Box & Lumber Co., Cleveland, O.
 Henry Holtzman & Sons., Columbus, O.
 Newton Kelsay, Evansville, Ind.
 E. T. Lippert, Pittsburgh, Pa.
 B. H. Williams, South Ashburnham, Mass.
 Mount Airy Furniture Co., Mount Airy, N. C.
 Haak Lumber Co., Wolverine, Mich.
 Gate City Furniture Mfg. Co., Greensboro, N. C.
 Elgin A. Symonds, Syracuse, N. Y.
 Columbus Chair Co., Columbus, Miss.

Studebaker Bros. Mfg Co., South Bend, Ind.
 Royal Mantel & Furn. Co., Rockford, Ill.
 Planett Mfg. Co., La Porte, Ind.
 Mansfield Chair Co., Mansfield, Pa.
 Guirl Stover Lumber Co., Memphis, Tenn.
 N. Y., O. & W. Ry., Middletown, N. Y.
 P. & L. E. Ry., Pittsburgh, Pa.
 Peabody School Furn. Co., North Manchester, Ind.
 Keller Mfg. Co., Corydon, Ind.
 Phila. Screen Mfg. Co., Philadelphia.
 Empire Furn. Co., Jamestown, N. Y.
 Wysong & Miles, Greensboro, N. C.
 Hall & Brown, St. Louis, Mo.
 Eby Machy. Co., San Francisco.
 Henry Chalin & Co., New Orleans.
 Starr Piano Co., Richmond.
 Adler Organ Co., Louisville.
 Allis-Chalmers Co., Milwaukee, Wis.
 Ruhlen & Miller, Lima, O.
 Reading Iron Co., Reading, Pa.
 Kirby Lumber Co., Houston, Tex.
 Sioux City Traction Co., Sioux City, Ia.
 Alamo Iron Works, San Antonio, Tex.
 Pa. Chair Co., Union City, Pa.
 Cummer Mfg. Co., Cadillac, Mich.

Ingersol-Sergeant Drill Co., Reading, Pa.
 Hoopes Bros. & Darlington, Ocala, Fla.
 Hickory Furn. Co., Hickory, N. C.
 Ohio Valley Furn. Co., Charleston, W. Va.
 Tucker & Dorsey, Indianapolis.
 Standard Furn. Co., Herkimer, N. Y.
 Julius Breckwoldt & Co., Dolgeville, N. Y.
 Crescent Mfg. Co., Leetonia, O.
 Chase City Chair Co., Chase City, Va.
 Cadillac Cabinet Co., Cadillac, Mich.
 Peter Klerner, New Albany, Ind.
 Probst Furniture Co., Pomeroy, O.
 Frank S. Hardin, McConnellsville, N. Y.
 Hepworth Mfg. Co., Hepworth, Ont.
 Henry Disston & Sons, Cincinnati.
 S. R. Dresser, Bradford, Pa.
 Colcord-Williams Co., Atlanta, Ga.
 Johnson & Marshall, Veedersburg, Ind.
 Wright Carriage Body Co., Moline, Ill.
 F. M. Hicks, Chicago.
 Penna. Furn. Co., Montgomery, Pa.
 Looschen Piano Case Co., Paterson, N. J.
 Iowa Farming Tool Co., Fort Madison, Ia.
 Pierce, Cequin & Co., Fulton, Ky.
 Noell Mfg. Co., Danville, Va.
 James King & Co., Baltimore, Md.

Thousands of Woodworking Plants and Pattern Shops Need B. T. & B. Narrow Band Saw Tools

Sold with full warranty. Quality and Price are right.

IF YOU HAVE any need whatever for a Band Saw Filer, Setter, Brazer or Filing Vise, don't be afraid to send us your order, stating the width and spacing of your different saws, that we may understand your requirements and meet them exactly or avoid the shipment.

REMEMBER THIS: Our machines are in use by an immense number of people and give them perfect satisfaction. They are more expensive than some, but just expensive enough to insure your getting machines that are worth buying. They are not sold at a delivered price or at a discount. They are designed for people who are critical and exacting, who want the worth of their money and who appreciate from observation or experience that the purchase of narrow band saw tools on the single ground of cheapness nets them a total loss on their investment, for cheap band saw tools are no good, and many an operator or saw filer can vouch for this.

TESTIMONIAL LETTERS AND NAMES OF CUSTOMERS.

We publish a few letters received from customers demonstrating the merits of our machines, also the names of a few hundred customers, merely to indicate the fact that the machines have been widely sold to operators in a great variety of industries during the period from 1897, when first put on the market, up to the present time.

W. W. PUTNAM & CO., STAUNTON, VA.—The Band Saw Filer and Setter are very satisfactory and we shall call on you shortly for a circular filer.

HOOPES BROS. & DARLINGTON, OCALA, FLA.—We would be glad to have you send us one of your Bolton Band Filers as per your letter. Kindly adjust the machine and send one dozen files for the style teeth of the sample we send you. We received the Manual and Saw Guard O. K. Further in regards to the filing machine we would say that we are wanting a filing machine, provided that we can get one that will do the work; and if yours does as well as your Bolton Setter we shall be more than pleased to keep it. We have tried machines for this purpose that did not give satisfaction. Express the machine as early as convenient. (The machine suited them.)

PROBST FURNITURE CO., POMEROY, O.—We are happy to say that the Bolton Band Saw Filer is the most complete little machine we have ever seen; it is doing fully as well as we anticipated; in fact it is absolutely perfect.

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.—Our firm is using your Narrow Band, Band Resaw and Circular Filing Room Outfits and all machines are doing splendid work. **LOUIS C. GUDE, Machinery Foreman.**

NEW YORK SHIPBUILDING CO., CAMDEN, N. J. **D. S. WRIGHT, FILER**—I am at present head filer for this company, using your machines on band resaws, narrow bands and circulars, and I find everything as it should be.

ROME FURNITURE & LUMBER CO., ROME, GA.—We are well pleased with the Bolton Band Saw Filer and Brazer you recently sent us and now would like to know what you have for filing circular saws from small ones up to 18 inches. We use both rips and crosscuts.

MORGAN MANUFACTURING CO., JAMESTOWN, N. Y.—We enclose bill of lading for the Ambler machine shipped you to-day. We might add that we have your Bolton Band Saw Filer set up and running and we are very much pleased with it.

WHAT CUSTOMERS SAY OF OUR Bolton Band Filers and Setters

Your No. 82 Setter received in good order. We have given the same a fair trial and it gives entire satisfaction and is all you claim it to be. We consider it the best machine on the market today.

ROYAL AMERICAN ENAMEL CO., Jersey City, N. J.

The Bolton Band Setter received from you some time ago is very satisfactory.

CHAS. E. WRIGHT CO., Waterbury, Conn.

Ship us one No. 82 Setter. . Ship us two Setters same as last. . Ship us six Bolton Setters, etc., etc.

MOUNT AIRY FURNITURE CO., Mount Airy, N. C.

We have tried the No. 82 Setter and 40 Filer, and like them both very much indeed. The 26-inch Knife Grinder is all you claim for it.

J. B. GALLOWAY, Clarendon, Ark.

I note on page 54 of your catalogue, edition of 1899, a machine for filing band saws, of which you make three sizes. You will please send me the machine No. 40A, two-inch capacity, by express. I run three band saw machines, file saws for each machine every hour, and filing by hand has not proved satisfactory altogether, although I have done this for a good many years. I have too much breakage of saws, on account of teeth being irregular and the filer slighting his work, so I take this means of obviating the trouble. I run band saws constantly the year round, so you will please send me a good machine—one that you know will do the work and do it right. **LATER**—Please send by express your Setting Machine and a pair of Fitting-Up-Wheels.

C. Mc. D. MOONEY, Cleveland, Tenn.

I have used a good many band saw sets, but yours is the best of them all.

"Regarding our experience with the Bolton Band Saw Filing Machine, will say, we have had one of your machines in operation in our factory for *more than one year*, and the machine has proved very efficient in every way, has proven very satisfactory, and we are filing all our Band Saws with the machine. We are filing band saws from 3-16 to $\frac{1}{2}$ inch and the *machine is doing the work for 19 Band Saw Machines*. As regards spacing and all other details necessary for proper filing, will say, *the machine is perfection in every sense of the word.*"

F. R. LUCE, Sec'y.

HUBBARD & ELDREDGE CO., Rochester, N. Y.

We have your inquiry as to how we are pleased with the Band Saw Filer which you furnished us some time ago. We are glad to say the machine gives us entire satisfaction. We are filing on it saws ranging from $\frac{1}{4}$ to $\frac{3}{8}$. We regard it as very simple and as invaluable to us as a labor saver.

J. A. HARPER, Filer, O. J. BEAUDETTE & CO., Pontiac, Mich.

Our firm bought of you some time ago a Band Saw Filer. I have used the machine since we received it and must say that it is the most perfect filer I ever used. Your Manual on Saw Filing came all right and is just what I want.

WHAT WE HAVE TO SAY ABOUT THEM.

We have marketed these filers and setters for every kind of saw in common use, ranging from hack saw blades with 24 teeth to the inch up to band saws having a spacing $\frac{3}{4}$ inch from point to point. We market the machines in all parts of the United States and Canada and sell many for export to all parts of the world. We believe these machines are the best built and the best working for saws properly within their capacity obtainable, and that their work will in general satisfy the most critical. We offer them with full warranty and solicit orders from the numerous concerns that have great need of just such appliances. We advise that each order specify width and gauge of saw and spacing of teeth to enable us to avoid making shipment of a machine not adapted to the requirements.

RUNNING A BAND RESAW, OR GOING TO?

That means one of our Sharpeners, Swages, Stretchers, Shapers, Brazing and Filing Clamps and a Hammering Outfit. You can't do without them. Over 700 concerns have settled this already. Write us size of your saws and we will specify the tools to suit.

B. T. & B.

2 to 8 in. Band Resaw Filing Room Outfits

OUR BEST TESTIMONIAL:

Over 1,000 Customers at Home and Abroad.

P R O M I N E N T F E A T U R E S:

<i>WEIGHT</i>	<i>AUTOMATIC</i>
<i>STRENGTH</i>	<i>EFFICIENT</i>
<i>RIGIDITY</i>	<i>VALUE ASSURED</i>
<i>WORKMANSHIP</i>	

EXTENSIVELY SOLD
—AND—
UNIFORMLY SATISFACTORY

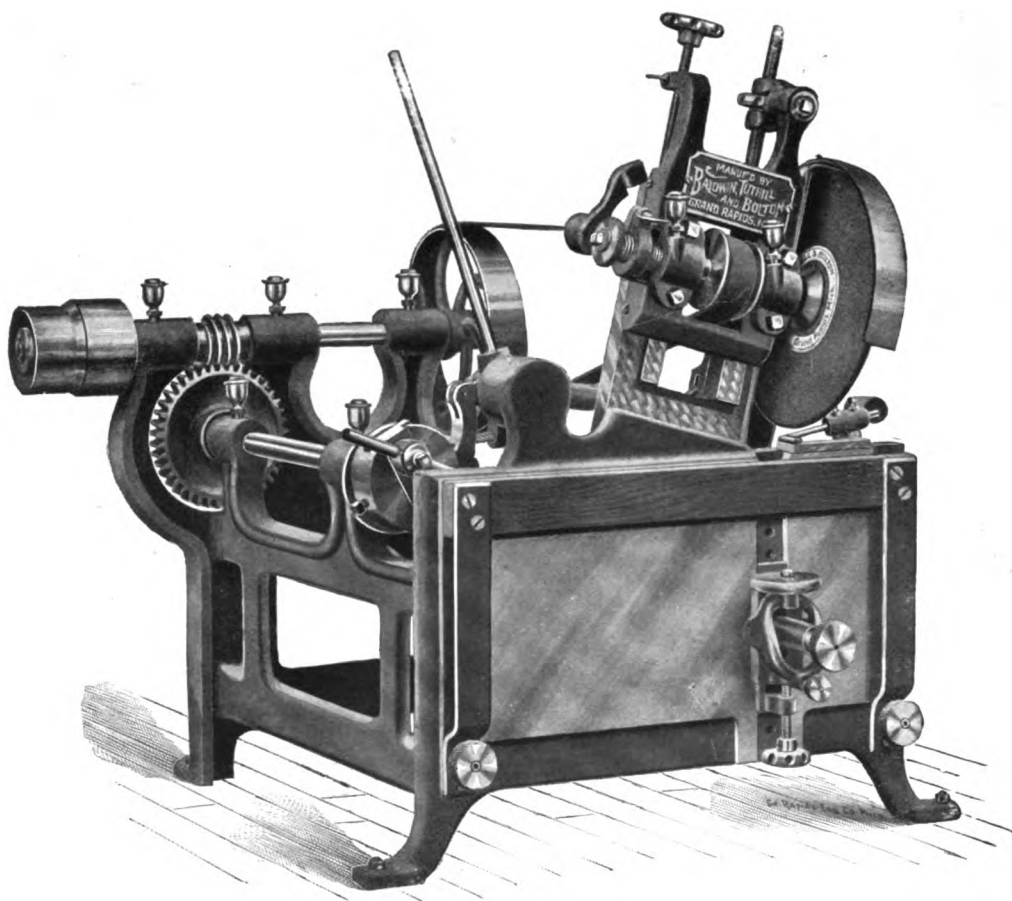
*Made for People Wanting Fine Tools,
Fully Tested, Adjusted and Equipped.*

BALDWIN, TUTHILL & BOLTON

GRAND RAPIDS, MICH., U. S. A.

FILING ROOM OUTFITS FOR ALL PURPOSES.

144 PAGE MANUAL ON SAW AND KNIFE FITTING, POSTPAID, \$2.00.



(Sold with unqualified warranty)

**No. 3 Bolton 2-6 Inch Band Resaw Sharpener, R. H. or L. H.
Cut Shows L. H.**

	Price	Code Word	Estimated Shipping Wt. lbs.
No. 3A, Bolton 2 to 6 in. band resaw sharpener R or L, no back pawl or supports for saws.....	\$ 75 00	Unlimit	200
No. 3B, R or L with adjustable pulleys for saw.....	90 00	Unlimited	300
No. 3C, R or L double feed, post brackets and back pawl.....	85 00	Unlimitable	215
No. 3D, for 24-inch circular rip saws and an extra front for 6-inch band resaws, no back pawl or supports for saws.....	95 00	Unlimiting	250
No. 3E, R and L double feed, post brackets and back pawl.....	95 00	Unique	240
No. 3F, combination band and circular, double feed, post brackets and back pawl...	105 00	United	260
No. 3G, combination band and circular, adjustable pulleys.....	110 00	Union	300
Driving Pulley	Speed	Floor Space	
3½-in.	750	26x30 in.	
1¼-in. Belt	30 Teeth	30-in. high	

With order give style number, hand of saw and style of teeth wanted.

An Iron Leg, Wood Frame Table, 21x27x32 inches high, on which to mount the sharpener, for \$10.00 extra, or customer can erect a suitable table at mill. Iron Legs only, \$5.00.

10 Per cent. Advance in Price for boxing and delivery f. o. b. cars New York for Ocean Shipment

Description of Bolton No. 3 Band Resaw Sharpener.

For band resaws from 2 to 6 inches wide and 16 to 26 gauge, our Bolton No. 3 Sharpener is indispensable to fine results. Band resaws cannot be run profitably with hand fitting. Using the sharpener, much time is saved, every tooth is fitted alike, the hook and width of saw are maintained, the saw cuts cleaner and smoother, the kerf is reduced, the feed is increased and with proper tension the frequent changing of saws is unnecessary.

Our band resaw sharpener combines every feature of convenience and advantage. We **POSITIVELY WARRANT** it to be the best designed and constructed, and the finest working band resaw sharpener of its size. Furnished for 7-inch saws on special order, but for saws wider than 6 inches we recommend the Bolton No. 2 Sharpener.

It is a heavy, strong and rigid machine, free from vibration.

Regular capacity, a 6-inch saw and an 8-inch emery wheel.

All boxes babbitted and fitted with brass oil cups. Ample provision for keeping all wearing surfaces well oiled. The main slide is thoroughly hand-scraped to bearing and all wear taken up by gib. The feed finger is adjustable. Reduced pulley relieves the belt strain when machine is idle.

Machine is equipped with powerful cut gears, emery wheel lifter, guard, dust pipe, blower and belting, wheel, etc.

Inclination of emery wheel obtained by slacking one screw and tilting the head. Can secure any hook up to about $4\frac{1}{2}$ inches on a 6-inch saw, more hook than is ever required.

A reversible form for shaping the back of teeth, one side adapted to make a straight back, and the other side adapted to make a rounded back to teeth. The inclination of this form may be varied at will by an adjustment of one set screw, to vary the pitch of the back of teeth. This form is very simple and convenient and enables the operator to readily produce any of the different styles of band resaw teeth.

The machine is built with slide head, carrying emery wheel, operated by two forms. As the saw is pushed forward by feed finger, the sliding form raises the head to conform with back of tooth, and as feed finger recedes, the rotating form engages and drops the head gently into the throat, allowing the emery wheel to just reach bottom of the throat as the saw is again pushed forward. There is no possibility of burning the points or grinding a depression at root of tooth, as all grinders operated by one form will do. Any kind of round gullet may be made.

The emery wheel has lateral adjustment, which obviates the necessity of changing the stroke of feed finger while grinding. A slight turn of the knurled nut shown at upper end of arbor will instantly change the grind from face to back of tooth. The saw rests on a hardened steel shoe, is held to machine and given proper tension by hardwood clamp supported by flat steel springs, and is instantly removable to admit or withdraw the saw.

An independently operated clamping wheel, with round face, which revolves against the side of saw, is mounted upon the rest for back of saw. The clamping wheel holds saw down when pawl pushes in upper part of face of tooth, as is sometimes the case with teeth of extreme hook, but it in no way interferes with the insertion or removal of saw.

The saw may rest horizontally upon adjustable pulleys or upon adjustable post brackets. We recommend the post brackets and double feed device. The machine will be adjusted to requirement, if order is accompanied with full specifications regarding the saws and with templet of saw teeth. Mount machine on bench of suitable height.

THE JUDGMENT OF CUSTOMERS.

GEO. A. DUDLEY, NORFOLK, VA.: Your Bolton No. 3 Band Resaw Sharpener has more good points to the square inch than all other makes combined.

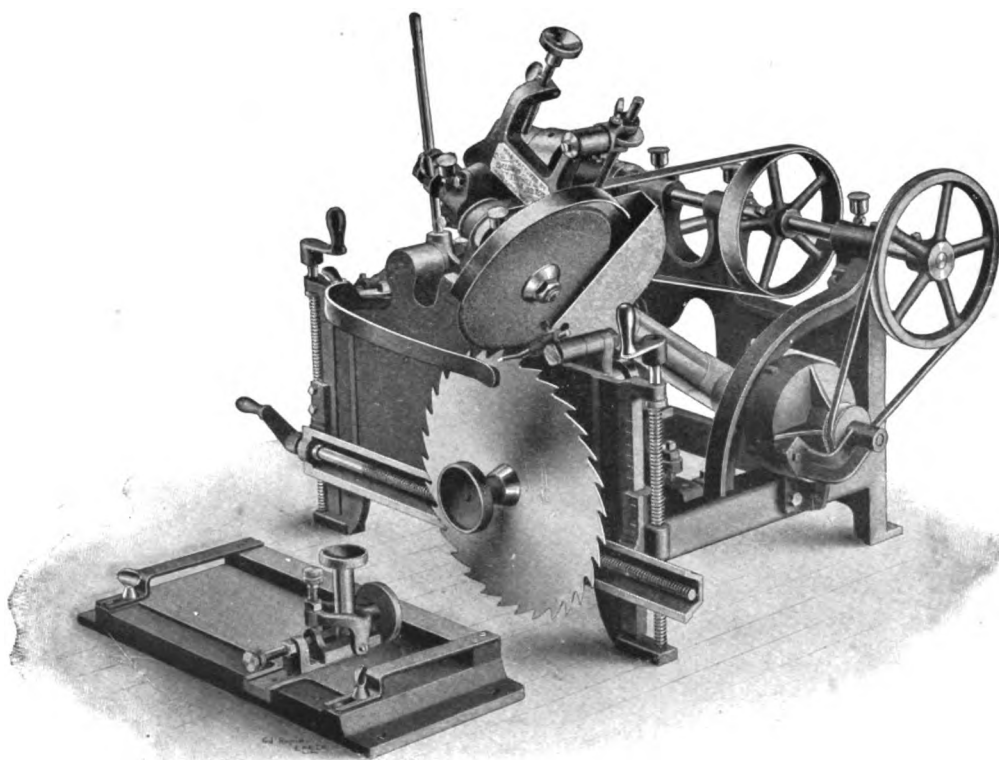
A. LASANCE, CINCINNATI, OHIO: The Bolton No. 3 Band Resaw Sharpener is doing nice work.

J. E. VOIGT, LUTCHER, LA.: The Bolton No. 3 Band Resaw Sharpener arrived last week and works fine, doing so well, in fact, that the man running the resaw has asked for more wages, as he has to handle a great deal more lumber.

BELDING HALL MFG. CO., BELDING, MICH.: I am using one of your No. 3 Sharpeners, which works the best and most complete of any machine of the kind I ever saw.

GRAND RAPIDS VENEER WORKS, GRAND RAPIDS, MICH.: The Automatic Band Resaw Sharpener works perfectly satisfactorily, and we are delighted with it. Can recommend it to anyone wanting a first-class machine in this line.

F. H. CLEMENTS CO., ROCHESTER, N. Y.: We believe your Band Resaw Sharpener is the best tool of the kind there is made.



No. 3D Bolton Band and Circular Rip or Resaw Sharpener.

	Price	Code Word	Estimated Shipped Wt. lbs.
No. 3-D, Bolton combination 2-6 inch Band and 4-24 inch Circular Rip Saw Sharpener, no supports for band saw, no back pawl	\$ 95 00	Unlimiting	250
No. 3-F, as above with double feed and post brackets and back pawl for bands ..	105 00	United	275
No. 3-G, like 3-D with adjustable pulleys for bands	110 00	Union	350

The above machine for circulars only is our No. 77, at \$75.00. The combination machine is very desirable for factory use.

Drive Pulley	Speed	Floor Space
3½ in.	750	26 x 30 in.
1¼ in. Belt	30 Teeth	30 in. high

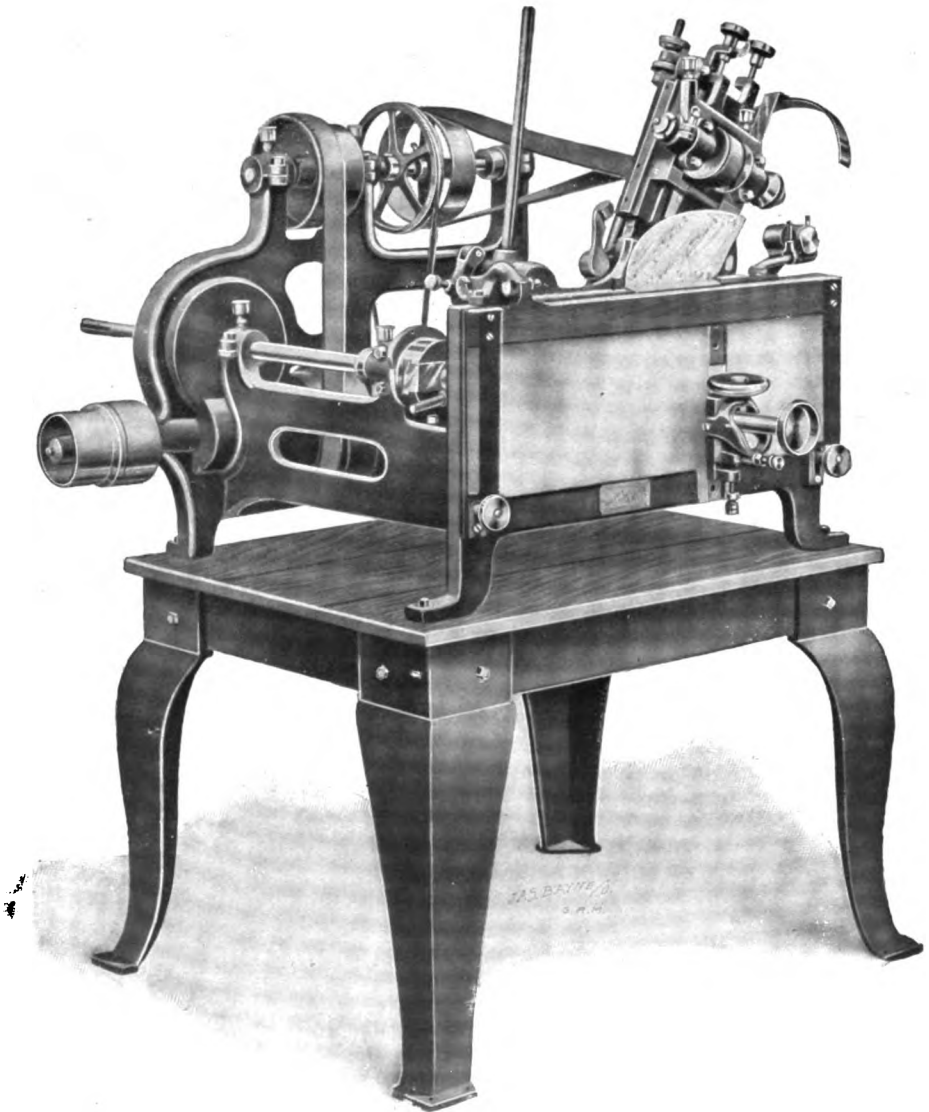
DESCRIPTION.

Our No. 3D Bolton Combination Band and Circular Rip or Resaw Sharpener is the most desirable sharpener built for all saws within its capacity. Its construction is identical with that of our No. 3 Bolton Band Resaw Sharpener, except that the main front is designed for circular saws, and when required for bands, the crosshead for support of circular saws may be run down and the band saw front bolted on, making the machine equally efficient for band or circular rip or resaws. It is especially desirable for all mills or factories having both band and circular saws, but with not enough work to justify the purchase of two machines. Built in L. H. style only.

With orders, give style number, tracing of teeth and hand of saws.

An Iron Leg, Wood Frame Table, 21x27x32 inches high, on which to mount the sharpener, for \$10.00 extra, or customer can erect a suitable table at mill. Iron Legs only, \$5.00.

10 per cent. Advance in Price for Boxing and Delivery f. o. b. cars New York for Export.

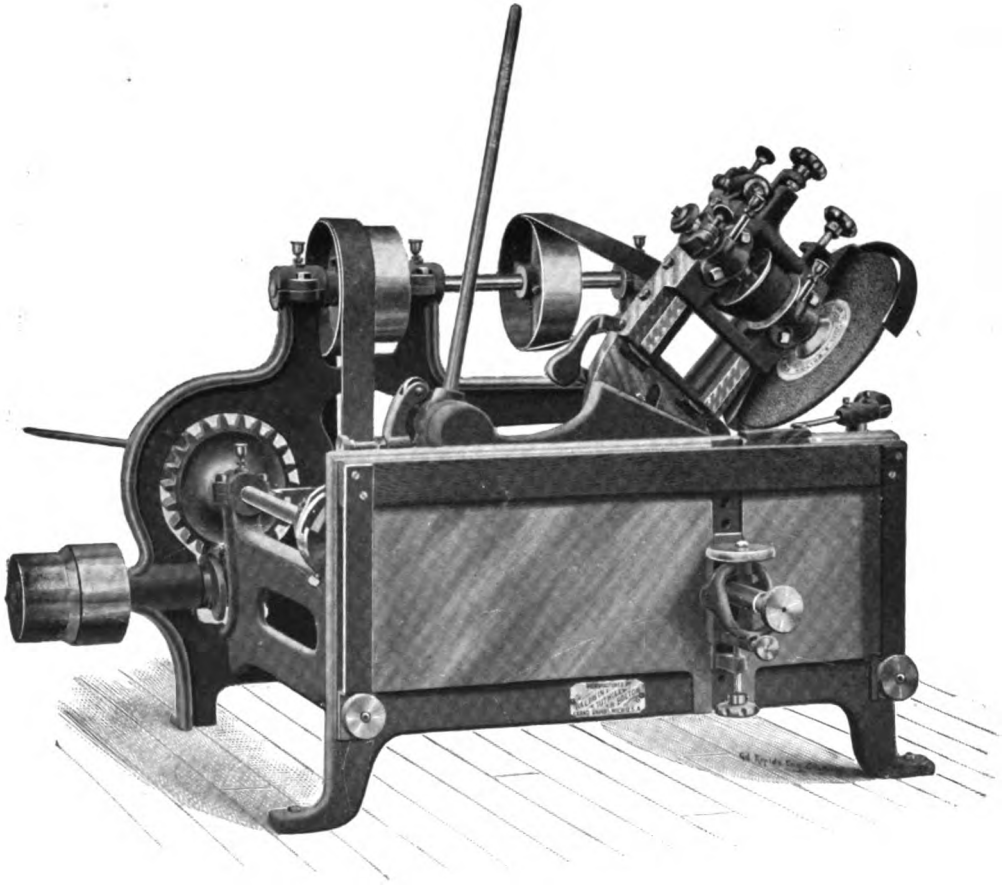


No. 2 Bolton Band Sharpener, Mounted on Iron Leg, Wood Frame Table.

See Price List Page 46

Table Complete for No. 2 Sharpener	\$10 00
Legs only for No. 2 Sharpener Table	5 00
Table Complete for No. 3 Sharpener	10 00
Legs only for No. 3 Sharpener Table	5 00

No Table or Legs furnished with Sharpener unless specially ordered at above prices.



(Sold with unqualified warranty.)

**No. 2 Bolton 2-8 Inch Band Saw Sharpener, R. H. or L. H.
Cut Shows L. H.**

	Price	Code Word	Estimated Shipping Wt. lbs.
No. 2 Bolton 2 to 8 in. Sharpener, no back pawl or supports for saw, R. or L.	\$115 00	Substance	500
No. 2A, R or L, double feed, post brackets and back pawl.....	125 00	Invincible	550
No. 2C, R and L double feed, post brackets and back pawl.....	135 00	Substantial	575
No. 2B, R or L with 36 in. adjustable pulleys to support saw.....	135 00	Invulnerable	750

Driving Pulley	Speed	Floor Space
2½ x 5 in.	700	30 x 36 in.
2-in. Belt	32 Teeth	32 in. high

With order give style number, hand of sharpener and tracing of teeth.

An Iron Leg, Wood Frame Table, 21x27x32 inches high, on which to mount the sharpener, for \$10.00 extra, or customer can erect a suitable table at mill. Iron Legs only, \$5.00. (See Page 45)

10 per cent. Advance in Price for Boxing and Delivery f. o. b. cars New York for Ocean Shipment.

Description of Bolton No. 2, 2 to 8 inch Band Saw Sharpener.

Our BOLTON NO. 2 BAND SAW SHARPENER has been designed especially to meet the requirements of saws used on the light log band saw or the heavy band resaw mills. WE POSITIVELY WARRANT it to be the best designed and constructed, and the finest working band sharpener of its size.

It is a heavy, strong and rigid machine, free from vibration. Maximum capacity, a 10-inch emery wheel and an 8-inch saw, or 10-inch on special order. All boxes long and heavy and fitted with brass oil cups. Slides long and heavy with wear taken up by gib. All wearing surfaces have oil chambers and are thoroughly hand-scraped to bearing. Feed finger adjustable; positive stop. Emery wheel arbor has lateral adjustment which obviates the necessity of changing the stroke of feed finger while grinding. Two-step pulleys afford two speeds to emery wheel to accommodate its wear. Reduced pulleys relieve the belt strain when machine is idle. Emery wheel, guard, dust pipe, blower and belting with each machine.

Inclination of emery wheel anything from 0 to 45 degrees, by slacking one set screw and tilting the head to give the hook desired. The cutting edge of emery wheel is always in the same relative position with respect to the feed finger, whatever the hook. Provided with Universal and Rotating Forms for producing readily any desired shape of tooth. An independently operated clamping wheel with round face, which revolves against the side of jaw, is mounted upon the rest for back of saw and holds saw down when pawl pushes in upper part of face of tooth, as is sometimes the case with teeth of extreme hook.

The machine is built with head composed of two slides, one mounted upon the other. The main slide carries the emery wheel up and down. The auxiliary slide takes up the wear of the wheel so that whatever the size of the wheel in use the wear of the main slide is always constant. The saw may rest horizontally on adjustable pulleys or upon adjustable post brackets. We recommend the post bracket and double feed device. The machine to be mounted on a bench of suitable height.

THE JUDGMENT OF CUSTOMERS.

ELK RAPIDS IRON CO., ELK RAPIDS, MICH., J. S. CURRIE, FILER: The Filing Room Outfit placed here by you is perfectly satisfactory. We run 10-inch 14-gauge saws 47 feet long on a McDonough Mammoth Band Resaw, and although the saws may be considered too heavy and unwieldy for you No. 2 Bolton Sharpener, yet the machine handles these saws efficiently, and in positive motion and accuracy of feed cannot be surpassed. Anyone in doubt can call here and see the machine at work and convince himself as to its merits.

JOHN J. SITZLER, 551 TENTH ST., BROOKLYN, N. Y.: As an experienced band saw expert, I will say that during the past seven years I have used the Baldwin, Tuthill & Bolton Filing Room Machinery and find everything first-class. The No. 2 Bolton Sharpener is everything one can wish for, and can be adjusted to any style of tooth I wish to use. I attribute my success largely to always having been equipped with your machinery. I always make my own saws from the blank blades and find your stretcher and shear, as well as your retooter, filing and brazing clamp, very valuable and the best in the market.

N. E. HUFF, FILER, M'COY LUMBER CO., HELENA, ARK.: The Bolton No. 2 Sharpener which you shipped the McCoy people arrived all O. K., and has been running about three weeks. It grinds very accurately and gives entire satisfaction.

SPRINGER LUMBER CO., SOUTH CREEK, N. C.: We will have to throw out the grinder that came with our mill, and you will please send us one No. 2 Bolton Band Sharpener as soon as you can, for we are needing it badly.

ERIE RAILWAY CO, UNION DRY DOCK, BUFFALO, N. Y., BY EDW. C. GASKIN, SUPT.: Replying to your inquiry regarding the Saw Filing Machinery you furnished us, I take pleasure in advising you that the complete filing room outfit has given us every satisfaction, especially the Bolton No. 2 Band Sharpener, which does its work accurately and without any trouble. The general construction of this machine is, to my mind, perfect.

MALEY, MAY & MALEY, EVANSVILLE, IND.: The No. 2 Bolton Band Sharpener and No. 8 Stretcher which we bought of you some time ago are all right in every respect. The construction of both we think is perfect, and the machines are the simplest and easiest adjusted and handled that we ever saw. We are very much pleased with both machines. Our filer has used several different kinds of sharpeners and stretchers, and he likes these machines better than any he has every used.

PERFECT TENSIONING

REQUIRES A

**BOLTON BAND, GANG, or
BAND RESAW STRETCHER****Thirteen Sizes for 2-14 Inch Saws, Single or Double Cutting.****The Best for Saw Shops or Filing Room.. Bolton Stretchers have the Weight, Power,
Cut Gears, Easy Leverage, Right Grind. They Tension Right.****WHAT ONE OF OUR STRETCHERS WILL DO.**

It renders the use of hammers almost unnecessary.

It prevents crystallization, cracking, brazing.

It makes no hammer marks.

It prolongs the life of saws.

It economizes saw bills.

It affects all parts of the saws uniformly according to pressure exerted.

It saves the filer both time and labor. Stretcher work to hanmer work is in proportion of 1 to 3 or 4.

It restores quickly and uniformly the tension lost by the strain of too rapid feed.

It affords straight running saws that cut to a line.

It soon pays for itself by increased quantity and quality of output.

It makes possible the use of the thinnest blades, thus saving saw kerf and money.

It does not require a skilled filer to operate it.

It enables the unskilled filer to greatly prolong the life of his saws.

It is a machine that is now considered by millmen, factory operators and filers to be indispensable to the perfect tensioning of bands, gangs and resaws.

Our Manual on Saw Fitting gives full information regarding proper use of stretcher.

Our Bolton Stretchers are offered in 13 styles and sizes for saws 2 in. to 14 in. wide, from 12 to 26 gage, single or double cutting.

Our Stretchers stretch right and are everywhere considered the best obtainable for the service.

Our extensive sale of these machines throughout the United States, Canada and foreign countries, our numerous testimonials, and our knowledge of the requirements and high-grade construction, are all guaranties that we can please you.

If you question the merit of the machine, try one.

The cost is a mere trifle compared with the increased life and efficiency of your saws.

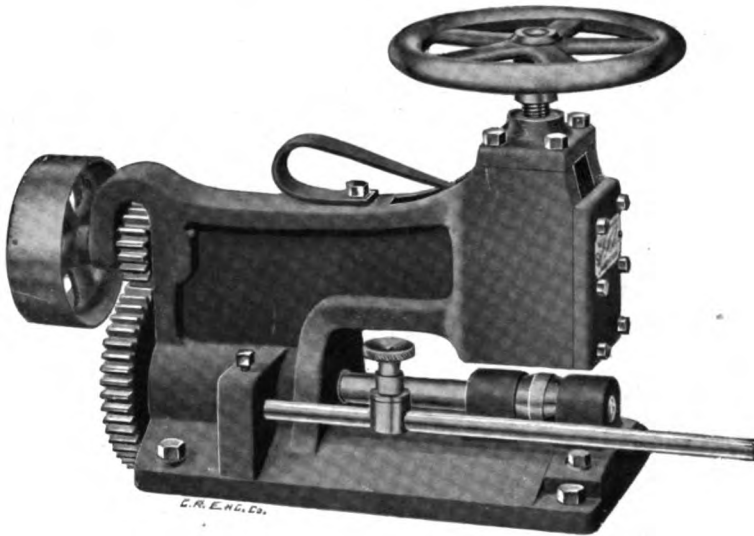
You can't afford to defer the purchase of a machine.

We can usually ship on sight of order.

CONSOLIDATED BOX & MFG. CO., MUSCATINE, IA. Replying to yours you may enter our order for Resaw Stretcher and Retoother and Shear. The teeth are spaced $1\frac{1}{8}$ from point to point and half-inch deep. This will enable you to fit them nicely. We have read your letter with pleasure, and order with more than usual confidence, because of the clearness with which your letter states the guaranteed working of the machines.

McFERSON & FOSTER, EVANSVILLE, IND. We have had in use in our mill for several years one of your Band Resaw Stretchers, and we have no hesitancy in pronouncing it decidedly the best machine that we have had in our file room. Previous to putting in this Stretcher we were troubled very much with our band saw breaking, but since this machine has been in use we have overcome this difficulty and experience no trouble in this respect to speak of. It is also a great labor saver, as we can fit up our saws in very much less time than we could before we put in this machine. We would not be without it for anything and think that it has more than paid for itself.

HERRIMAN & CURD CO., HANNIBAL, MO. We are very much pleased with the two Band Resaw Stretchers that we purchased of you some time since, one each for our Hannibal and Eau Claire factory. These Stretchers have given us perfect satisfaction. We have had no cracked saws since using these machines. They also give us more perfect uniform tension than we have been able to secure through the old method of hammering which we had in practice before the receipt of your stretchers. They also enable our filers to do more satisfactory work. We would not be without them.

**Bolton Band Resaw Stretcher.**

No. 9A—For Saws 2 to 6 inches wide. \$75.		No. 9B—For Saws 2 to 8 inches wide \$85.	
Approx. Weight	Driving Pulley	Speed	Floor Space
(No. 9A) 200 lbs.	10-inch—2-inch Belt	100	10x20x16 high
(No. 9B) 275 lbs.	10-inch—2-inch Belt	85	10x32x21 high

to per cent advance in price for boxing and delivery at New York for export.

The No 9A or 9B Bolton Stretcher is built with upper roll undriven, and with hand-wheel and screw device for pressure, cut gears, solid steel rolls ground on approved segments, and warranted efficient in every respect. In operation it is quick, handy, powerful and convenient.

No. 9—For Saws 2 to 6 inches wide \$75.		No. 9C—For Saws 2 to 8 inches \$85.	
Approx. Weight	Driving Pulley	Code Word	Speed
(No. 9) 200 lbs.	10-inch—2-inch Belt	Indispensable	85-100

No. 9 and 9C Bolton Stretchers, in 6 and 8 inch capacities, at \$75 and \$85, respectively, have lever and eccentric device for pressure and require the application of hand power in tensioning. The power required is moderate, and after a little use the operator comes to "feel" his saw and can vary the pressure at will instantly, and thus accomplish desired results in a minimum time. They are identical in style and manner of construction with the No. 9A and 9B machines, differing only in the detail of manner of pressure. For short gang saws the machines are the quickest working of any we have.

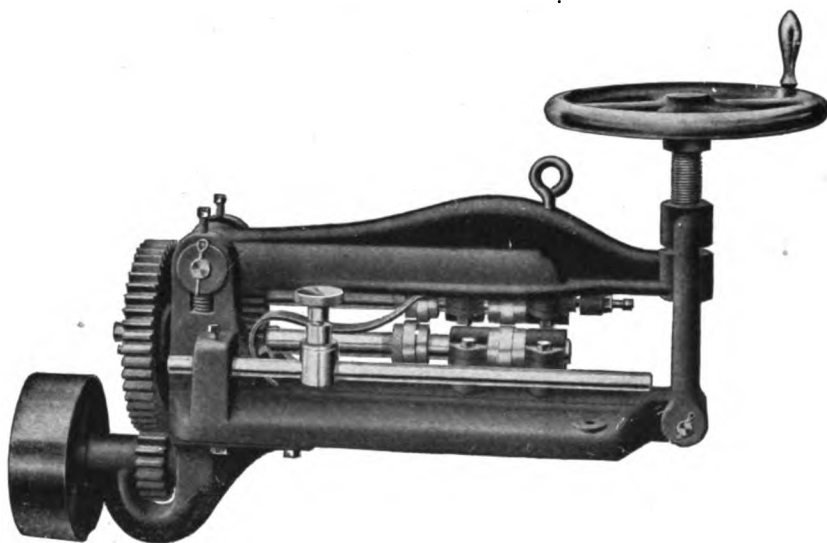
WM. B. MERSHON & CO., SAGINAW, MICH. Replying to your letter asking us our opinion of the tools you manufacture for fitting Band Resaws, would say that we have been using these ourselves and furnishing a good many to our customers, and they have given good satisfaction.

BUFFALO PLANING MILL CO., BUFFALO, N. Y. The Stretcher, Shears and Retoother that we bought of you about a year and a half ago have given us the utmost satisfaction, and we do not see how any well regulated mill using a Band Resaw can do without them. We certainly take pleasure in testifying to their merits.

WING & ENGEL CO., OLDTOWN, ME. We have had one of your No. 9 Bolton Stretchers in use about four years and could not keep house without it.

ARTHUR SIMPSON, EAST SAGINAW, MICH. In reply to your inquiry as to how we like Band Resaw Fitting Tools, would say we do not know how we could possibly get along without them; especially the Saw Stretcher. We have run one set of saws on our machine ten months without having to braze once in that time, which is largely attributable to the fine work done by your Resaw Stretcher. Will say that our man was entirely new to band resaw work. I think the Stretcher is a great saver of saws and time in keeping them in repair, and consider that you have the best set of tools of that kind on the market. The Swage and Side Dresser are simply immense. You can refer to me at any time.

DILLINGHAM MFG. CO., SHEBOYGAN, WIS. We have been using one of your Stretchers now for several years and find it a very useful tool, performing all you claim for it. It puts the required tension in saw blades, leaving them smooth and free from dents and hammer marks, that soon use up the life of band saws that are fitted by the use of hammers.



No. 8B—Stretcher for 6 inch saws, without Shear **\$75 00**
 No. 8C—Stretcher for 6 inch saws, with Shear... **85 00**

Approx. Weight,	Driving Pulley	Speed	Floor Space	Code Word
250 lbs.	10 inch	95	12x22 inches	(8B) Amiable
	2 inch Belt	20 feet	17 inch high	(8C) Amenable

10 per cent. advance in price for boxing and delivery at New York for export.

The No. 8B and No. 8C Bolton Stretchers are built with geared rolls and with or without cutters for shearing as listed, hand wheel and screw device for pressure, cut gears throughout, solid steel rolls ground on approved segments, and warranted efficient in every respect. With this machine provided with shear, a band saw may be sheared on either edge at same speed as saw feeds through in tensioning. It is quick, handy, powerful and convenient.

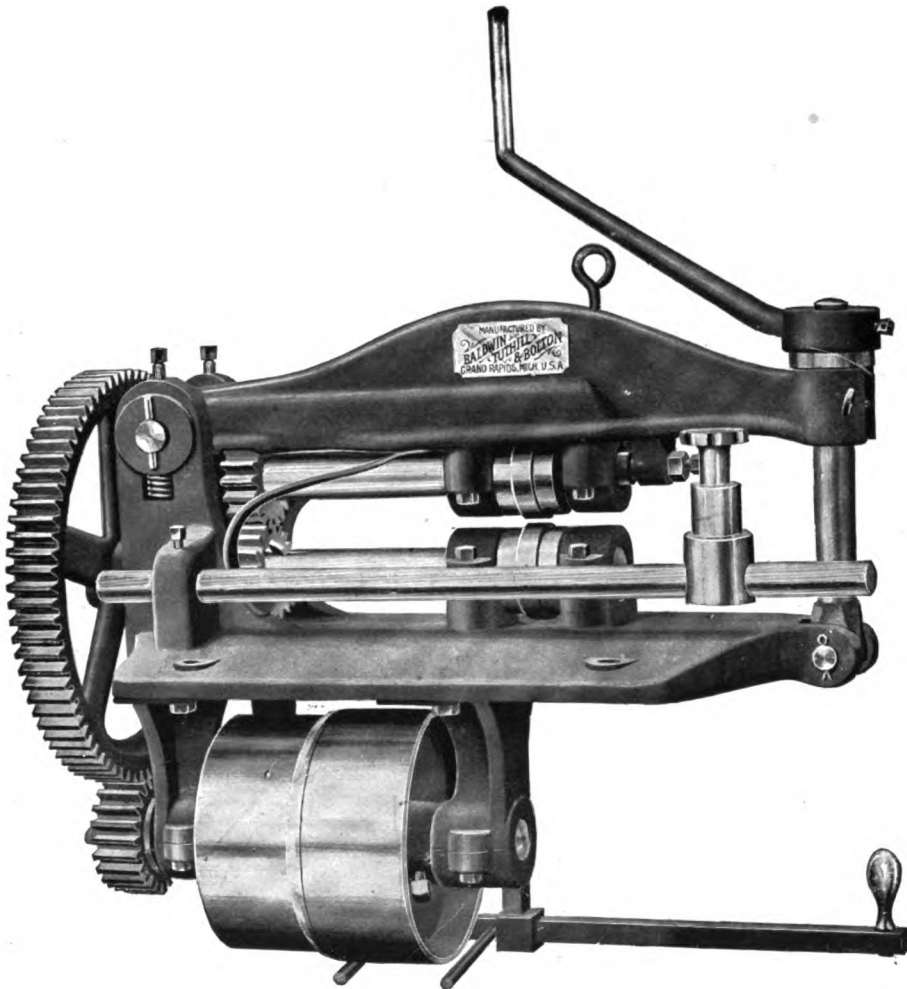
THE HALL & MUNSON CO., BAY MILLS, MICH. We have yours quoting your different styles of Saw Stretchers, and we beg to advise you that we have decided to purchase another one of the Band Resaw Stretchers at your list of \$75. This makes two of these machines that we have purchased from you within a month. You will please enter our order immediately, so advising us.

LINTON MFG. CO., EAST SAGINAW, MICH. After getting prices, cuts and descriptions from other manufacturers and comparing them with yours, we decided to purchase from you one of your Saw Stretchers, Retoothers, Band Swage and Swage Shaper. We have used them all for some time and given them thorough and severe tests, and have no hesitancy in saying that they are the best machines of the kind made.

ALAMAGORDO LUMBER CO., ALAMAGORDO, N. M. We are using your No. 8 Stretcher at the present time and it is giving entire satisfaction.

JOSHUA OLDHAM & SONS, NEW YORK, N. Y. You have the very best Saw Fitting Machinery in the world.

F. M. WEST, SPRINGFIELD, MASS. I am using your Band Resaw Stretcher and Sharpener and consider them first-class tools and indispensable in the use of Band Resaws. (Bought another.)



No. 8 Stretcher for 9-inch Saws, without Shear \$100 00
No. 8A Stretcher for 9-inch Saws, with Shear 110 00

Approx. Weight	Driving Pulley	Speed	Floor Space	Code Word
400 lbs.	8 x 3 inches	115	20 x 30 inches	(8) Esteemed
	2½ inch Belt	25 feet	24 inches high	(8A) Esteeming

May be furnished with Anti-Friction Washer.

10 per cent. advance in price for boxing and delivery at New York for export.

The Stretchers above listed have capacity for saws 2 to 9 inches wide and are suitable for log bands, gangs or band resaws. They are similar in style, but the No. 8A is provided with cutters for shearing, thus enabling the operator to trim either the back or toothed edge of saw at same speed as travel of saw through rolls when tensioning. It has geared rolls of solid steel, cut gears throughout, lever and screw for pressure, may be driven from below or on order will be furnished with extended shaft, bracket support and pulley to drive from overhead. It is a very efficient, desirable machine for log bands or band resaws ranging to 9 inches wide. Every operator using saws of such widths and not already equipped with the machine, will find it highly advantageous. May be furnished with bed plate and with hand wheel and screw feed for lateral movement, in same style as the No. 5 Stretcher, when so ordered, at \$35 extra.

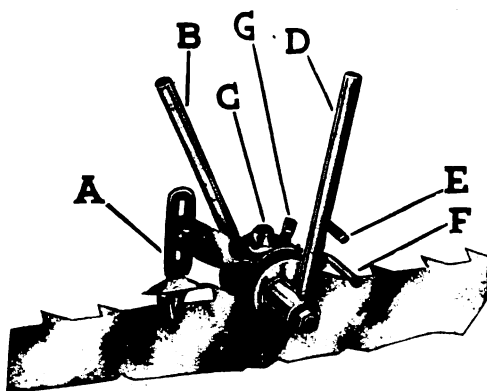
HARRIS & COLE BROS., FLATWOODS, TENN., J. E. COFER, FILER. Your No. 8 Stretcher and Shear is an excellent tool in the hands of a competent workman, for he needs no hammer to level with. I haven't put a hammer on my saws since I have had the Stretcher, and the mill is cutting from 2,000 to 3,000 feet more per day than it ever cut before. (This company has purchased three Stretchers.)

BOLTON BAND, BAND RESAW OR LIGHT GANG SAW SWAGE

The swaging of band resaws from 17 to 23 gauge is an important and delicate process. The swaging may be accomplished by the use of an upset or our eccentric swage, but all filers find the swage much superior to the upset. It draws out the tooth, gives a good spread and strong corner and is rapid in operation.

Our Bolton Eccentric Resaw Swage has met with a very large sale and seems to combine all the points of a perfect tool. It has been sold for use on saws as thin as 23 gauge, and as heavy as 15 gauge. The swage as made for band resaws can be used on any teeth 3-16 inch or longer. It swages by an eccentric stroke of die on face of tooth, making a slight impression and spreading the tooth widest at the point. The swage can be readily adapted to all ordinary shapes of teeth and gives sufficient swage without the use of an upset. The guides shown on machine are adjustable to bring swage alike on all teeth. The tool is made of steel and will last a long time. It is full nickel plated. Any part can be duplicated at a small cost.

This machine has had a large sale for Band Resaws of all widths, spacings and gauges.



IMPORTANT.—Every order should be accompanied with a templet or careful pencil tracing of the teeth, with gauge of saws and amount of swaging desired. The tool can then be properly adjusted.

No. 13	For Saws 18 to 26 Gauge.....	\$25 00	Code Word, Ingenious
No. 14	For Saws 15 to 18 Gauge.....	25 00	" " Ingeniously

Boxed 4x6x12 in. Weight, 3½ lbs. Sold with unqualified warranty.

No. 13. Bolton Band Resaw or Light Gang Saw Swage.

JAMES BAILEY, FILER FOR JAMES H. DYKEMAN, BROOKLYN, N. Y.—The Bolton No. 13 Face Swage for Band Resaws is the best tool of the kind I have ever handled, and I am twenty years in the business. I run a very short tooth, 5-16 inch, on my very thin saws, and have always found that other swages, while making a good swage on 19 gauge or heavier saws, would not give satisfaction on 22 gauge or lighter saws. But judge of my surprise when I swaged the first saw 22 gauge, 31 feet long, in twelve minutes, and my teeth were so uniformly spread that I used the Bolton Swage Shaper more through force of habit than because there was any need of it. I use the swage on saws from 18 to 22 gauge with equally good results. We are using up-to-date filing room equipment, B., T. & B. machinery throughout. I have been here six months, and although we are working thirteen and one-half hours per day and sawing spruce and North Carolina pine, I have not had a saw crack once. Good filing room machinery does the work if properly handled.

Hundreds of similar testimonials received.

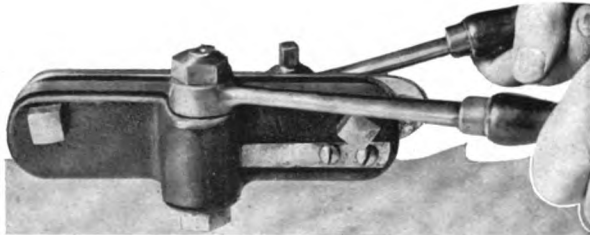
Swage Shapers or Pressure Sidedressers for Band, Gangs, Circulars and Resaws.

The side dressing of a band, gang or band resaw has much to do with the saw cutting straight and smooth. Each tooth must stand straight and have a perfect clearance at the point, with sharp, keen cutting corners. The point, or cutting edge of tooth, should be the widest, with taper down and back from point for perfect clearance. This prevents friction in the cut, which tends to heat the saw and affect its tension. Having the saw properly sidedressed, very thin saws can be run successfully, cutting a minimum kerf on a maximum feed and output.

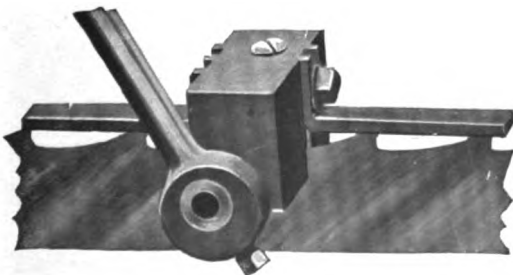
Expert saw filers are coming more and more to use the swage shaper wholly for sidedressing purposes, and while a side file may be used by some with results satisfactory on saws of 12 to 16 gauge, the side file will not do for light gauged saws. For band resaws a shaper is considered indispensable.

The Swage Shaper or Pressure Side Dresser dispenses with the use of this side file. The tool is used similarly to an eccentric hand swage, resting over point of tooth and operated by a single lever, to force the sidedressing dies together. The shaper completes the work of the swage, and by its use the swaged tooth may be pressed into perfect and uniform shape. A pair of dies press upon the sides of the swaged tooth, compressing the swaging to any desired gauge and tapering the tooth downward and backward from point, making a perfect clearance, with face and point always the widest. This is the ideal way to sidedress a saw tooth. The shaper saves the steel instead of filing it away. It tends to keep the teeth straight and in line, evens the swaging, leaves a good body to the tooth for subsequent swaging and it is rapid in operation, sidedressing from 30 to 40 teeth per minute, as commonly used by saw filers. It is worth while to aim for the best possible results in swaging and sidedressing, as you will thus have fewer bad cuts, fewer saws come off, and less work in hammering and tensioning. Our Swage Shapers are now used in thousands of mills and factories, on all kinds of band and gang saws, and are indispensable to perfect sidedressing.

DIRECTIONS FOR USE.—Swage your saws. Next start your automatic sharpener and grind around once to remove any burr or feather edge on face of tooth. Next sidedress the teeth with shaper. Then finish sharpening. **NEVER USE SHAPER ON NEWLY SWAGED TEETH UNTIL ONCE SHARPENED.** Tooth stop must be lowered so that it will strike in throat of saw. The width of the swage after sidedressing is determined by the amount of bevel on the jaws that come in contact with the swaged point.



No. 417. Mershon Pressure Sidedresser, \$15 00. Code word, Mershon.



No. 29 Bolton Swage Shaper \$15.00.



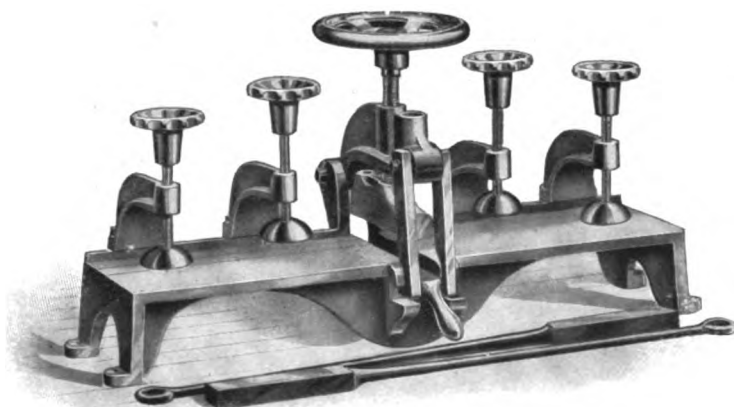
No. 133 Bolton Band Resaw File Sidedresser \$2.50.
Bevel to any gauge. Use common 6 inch files. Guides from top to tooth. Nickered. Dresses one side.

A pressure sidedresser for band or gang saws, 17 gauge or thinner. May be furnished for log bands or gangs. Code word, Necessary. Weight, boxed 4 pounds.

Six or Nine Inch Bolton Brazing Clamp.

Our Brazing Clamps for medium width log bands or band resaws are convenient, powerful machines, which render the process of brazing an easy and successful one for any saw filer. The bed and back for saw are planed surfaces. The smaller sized machine is adapted to saws up to 6 inches wide, and the larger sized machine is adapted to saws up to 9 inches wide. The lower heating iron rests on a sliding wedge, which fits in a planed way, affording a square, even rest for the iron, and maintaining its surface in any position with the surface of the table for saw. When the lap is ready, by drawing out the wedge a short distance, the lower iron may be handily removed, heated and replaced as before. The wedge readily accommodates any thickness of iron and brings the face of the lower iron, whatever its thickness, flush against the saw. This feature is one of material convenience and advantage. These machines are specially designed for patch brazing, having an extra socket for clamp screw for use in brazing in patches.

The machine has invariably given satisfaction.



(Sold with Unqualified Warranty)

No. 19, 6-inch Machine, complete with irons, Price.....				\$15 00
No. 20, 9-inch Machine, complete with irons, Price.....				20 00
	Approx. Weight,	Floor Space,	Code Word,	
	No. 19, 100 lbs.	10x15x30 in.	Superior	
	No. 20, 225 lbs.	12x17x32 in.	Superiority	

BOLTON PONY BAND OR BAND RESAW FILING CLAMPS.

A filing clamp or vise is a necessary device for use in fitting up band resaws. Our clamp is very quick and handy, made of iron throughout, and should be mounted on a stand or bench in line with saw, next to sharpener. The clamps have planed jaws, giving a perfect bearing on saw, and are clamped or released instantly. The rests for back of saw are adjustable to suit any width of saw within the capacity of the machine.



No. 25, 36-inch Filing Clamp for Saws up to 7-in. wide, f.o.b. Grand Rapids,	\$15 00
No. 26, 42-inch Filing Clamp for Saws up to 10-in. wide, f. o. b. Grand Rapids,	\$20 00

Approx. Wght,	Floor Space,
No. 25, 100 lbs.,	10x12 in. 38 in. h.,
No. 26, 150 lbs.,	12x14 in. 44 in. h.,

Code Word,
No. 25, Expedient
No. 26, Expediency.

(Sold with unqualified warranty)

to per cent. advance in price for boxing and delivery at New York for export

Miscellaneous Tools Adapted to 2 to 8 Inch Band Resaws

(For Swages or Shapers Specify Gage of Saw and Send Templet of Teeth)

Swages		Shapers	
Hanchett	\$28 00	Pribnow	\$25 00
White	80 00	Brazine, 4 oz., mailed	\$2 13
Crowell	20 00	Brazine, ½ oz., mailed	44
Parke	25 00	Emery Wheel Dresser	2 00
Crescent	25 00	Dresser Cutters, per set	26
Covel	20 00		
Sawsets, mailed	1 55		
No. 16	Bolton Retooler, dies to templet		\$35 00
No. 17	Bolton Retooler Shear, dies to templet		45 00
No. 15	Bolton 14 inch Shearing or Crosscutting Machine		50 00
No. 41	Special Band Saw Brazing Forge		30 00
No. 14	Open Hearth Portable Forge, Half Hood		20 00
	Repairs for Swages, Shapers, Sharpeners, etc., see Index		
No. 23	Bolton 8 inch Lap Cutter		75 00
No. 21	Bolton 8 inch Lap Grinder		85 00
No. 27	Bolton Band Wheel Grinder		90 00

A Two to Six Inch Band Saw Hammering Outfit

One pair of Light Hammers, Doghead and Crossface	\$ 5.00
One Back Gage, Tension Gage and Straight Edge, 48-66 inch	5.00
One 6x48x3-inch Iron Leveling Block Surfaced two sides	12.00
One Anvil, Steel Faced, 5x8, about 60 lbs., or 6x10 about 86 lbs., per lb.	.12

AN 8 INCH BAND SAW HAMMERING OUTFIT.

One pair of Hammers, Doghead and Crossface	\$ 5.00
One Back Gage, Tension Gage and Straight Edge, 60-88 inch	7.00
One 12x48x3-inch Iron Leveling Block, surfaced two sides	15.00
One 6x10 Anvil about 86 lbs., or 8x12 about 165 lbs., per lb.	.12

SAW TOOLS.

Always specify B., T. & B. Hammers, Anvils, Straight Edges, Tension Gauges, Leveling Blocks, Upsets, Swage Bars, Side Files, Jointers, Sawsets, Set Gauges, Marking Stamps, Emery Dressers, Saw Gauges, Speed Indicators, etc. We furnish tension gauges, convex or concave, on segment of any desired circle, back gauges straight one edge, concave to order on other edge; leveling blocks, any thickness, width or length. Hammers to order, any weight, style or grind. B., T. & B. Silver Solder never reported unsatisfactory. Buyers of Brazine repeat their orders. The best saw tools are the cheapest to buy. We have them.

Band Saw Post Sockets and Brackets, Idle Pulleys, Etc.

A full set of sockets, brackets and idle pulleys are desirable for use with band sharpeners, if equipped with double feed device.

	Idle Pulleys	Code Word
No. 34 Post Sockets, each	No. 36 4-foot Pulley, each	\$20 00 Idle
No. 35 Post Brackets for use with sharpener, each	No. 36A 3-foot Pulley, each	17 50 Idler
	No. 36B 2-foot Pulley, each	15 00 Idling

Adjustable Pulleys for Band Resaws

A pair of adjustable pulleys for support of saw for fitting up purposes, such as swaging, sidedressing, filing, etc., is a desirable adjunct to a band resaw filing room. A set of these pulleys may be used to support the saw to sharpener, but for such purpose we advise the use of our double feed finger and post bracket device as preferable. Our pulleys are laid up from seasoned wood strips and are turned true and are nicely balanced. Each pulley has a vertical adjustment to suit the width of saw and one has a horizontal adjustment to suit length of saw. We furnish no stands, but pulleys may be mounted on separate supports or on a small horizontal timber run under the sharpener at suitable height from floor. Our pulleys are low priced and perfectly adapted to their use, and every user of small band saws should have a set.



Emery Wheel Dresser

Will true Emery Wheels while running at full speed.	
Price, with cutters	\$2.00
Price of extra cutters, per set	.25
Postpaid	\$2 15
Postpaid	26

Each pulley has a vertical adjustment to suit the width of saw and one has a horizontal adjustment to suit length of saw. We furnish no stands, but pulleys may be mounted on separate supports or on a small horizontal timber run under the sharpener at suitable height from floor. Our pulleys are low priced and perfectly adapted to their use, and every user of small band saws should have a set.



Adjustable Pulleys for Band Resaws

(For use with sharpener or Filing Vise)

	Code Word
No. 37 24-inch Pulleys	15 00 Pull
No. 38 36-inch Pulleys	20 00 Puller
No. 38A 42-inch Pulleys	25 00 Pulling
No. 38B 48-inch Pulleys	30 00 Pulled

A set of three or four bracket and floor rolls for handling a band saw around or above the hammering bench is desirable. There is nothing better for the purpose made than the equipment illustrated. Saw hammering and fitting tools—refer to cut and price list of saw tools.



Jointer \$3 00 Postpaid \$3 25



No. 39 Bracket and Floor Rolls for Band Saw Hammering Bench

Wall Brackets with Roll	\$ 5 00
Floor Rolls, each	2 00
Per Set of 3 each	20 00
Code word, Brackets	

B. T. & B.

Log Band, Gang and Circular

FILING ROOM OUTFITS

These Machines, abundantly HEAVY, STRONG and EXACT WORKING, with every feature of advantage or adjustment, that experience has demonstrated necessary to adapt them to a wide range of requirements, are offered as representatives of the BEST BUILT AND FINEST WORKING MACHINES for.

SHARPENING, TENSIONING,
FILING, LAP MAKING, BRAZING,
PATCHING, RETOOTHING,
SHEARING, BAND
WHEEL GRINDING, ETC.

*Buy Filing Room Machinery having
its intrinsic value self evident. We
make this kind.*

BALDWIN, TUTHILL & BOLTON

GRAND RAPIDS, MICHIGAN, U. S. A.

144 PAGE MANUAL ON SAW AND KNIFE FITTING, POSTPAID, \$2.00

Description of Bolton No. 127, 4 to 12 Inch Band Sharpener

The Bolton No. 127 Band Sharpener is strong and well built on designs essentially similar to the No. 1 Sharpener. It is recommended specially for log saws ranging 8, 9 or 10 inches wide, although it has weight, strength and capacity for saws up to 12 inches wide. Shafting $1\frac{1}{8}$ or 1 inch steel. Double slide head. Slides and bearings hand scraped. Gibs to take up the wear. Oil cups. Adjustable feed finger with positive stop. Three-step cone pulleys to suit wear and grade of emery wheels. Reduced loose pulley to relieve the belt strain when machine is idle. Powerful cut gears. Affords any desired hook. Universal and rotating forms for producing any shaped teeth. Built with lateral adjustment of emery wheel arbor, fitted with spring washers to govern grind on face of tooth and prevent case hardening. Preferably equipped with double feed and post brackets. Closely adjusted to template of tooth submitted.

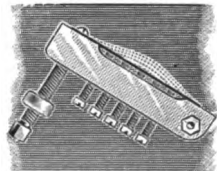
A long, hardwood clamp for saw, capable of giving the saw any desired tension, and hinged to drop downward instantly to admit or withdraw saw, holds the saw stiff and rigid while being fed through the machine. Clamp locked at top of machine to prevent end play when saw feeds.

Emery wheel guard, dust pipe and exhauster to withdraw and discharge dust at rear base of machine.

Inclination of emery wheel anything from 0 to 45 degrees, by slacking one screw and tilting the head to give the hook desired. The cutting edge of emery wheel is always in the same relative position with respect to the feed finger, whatever the hook.

A LATERAL ADJUSTMENT for emery wheel arbor governs the grinding of emery wheel on tooth. It is a convenient, sensitive and perfect device and no adjustment of feed finger is necessary. Spring washers permit a slight lateral offset of wheel from tooth in case of unduly heavy grinding and avoid any liability of case hardening.

A UNIVERSAL FORM for shaping the teeth, the pitch and outline of which form may be varied at will by operator, by adjusting the set screws in form which bear against the under side of the spring steel form plate to produce any shaped back for teeth. This universal form makes it possible



Universal Form

for the operator to produce any of the different styles of band saw teeth, in the simplest and easiest possible manner. It does away with the experimental building up or dressing down of wood or cast iron forms, to produce a different style of tooth.

THE JUDGMENT OF CUSTOMERS.

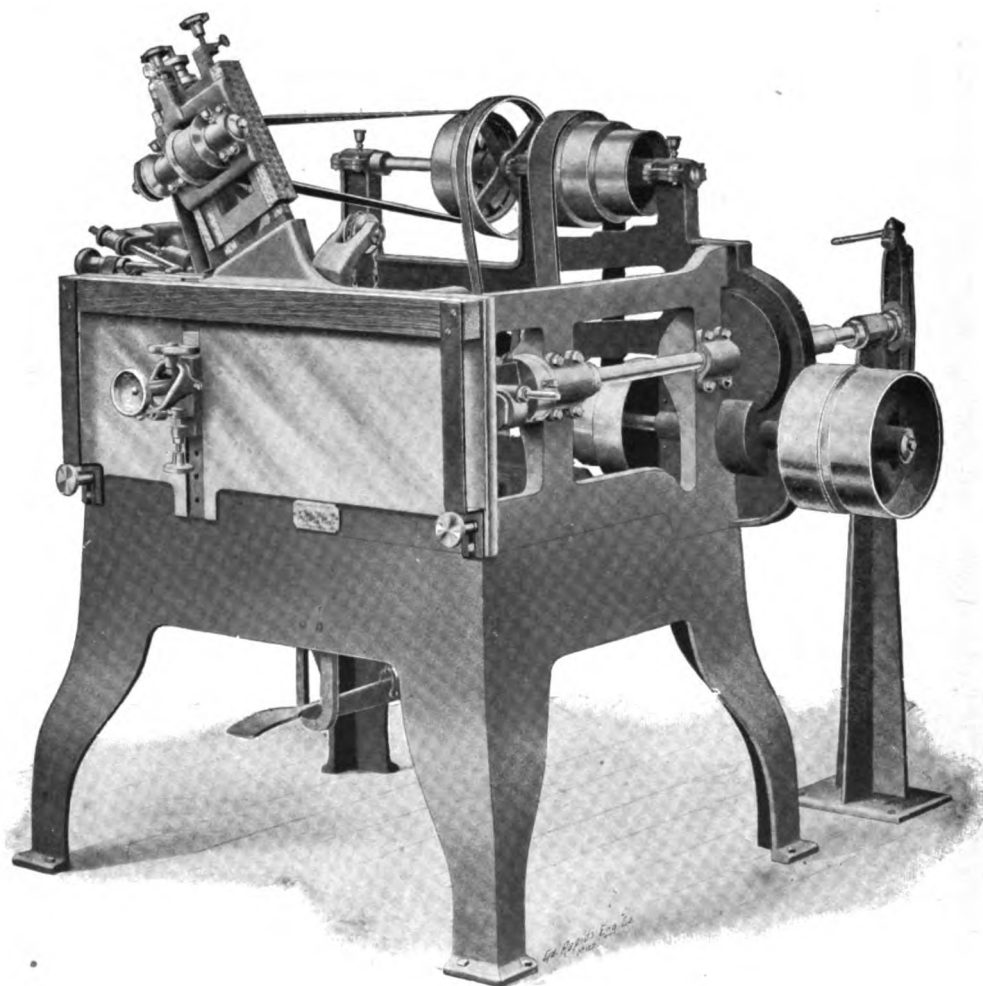
C. S. BLISS, SAGINAW, MICH.: I have been using your Bolton No. 127 Band Sharpener and consider it a very thorough, complete and up-to-date reliable machine. My filer is also very well satisfied with it, and I feel certain that anyone purchasing this machine for a band sharpener will be well satisfied with it. I do not hesitate to recommend it.

J. A. FRASER, NORMAN, ONT.: (Rat Portage Lumber Co.) I am using one of your Bolton Band Sharpeners, which excels on account of its durable build and universal form for back of tooth. If all your other machines are up with it, they are first-class.

WATEROUS ENGINE WORKS CO., BRANTFORD, ONT.: There is no question whatever that your machines are well made and of the greatest utility.

F. OUDERKIRK, NEHASANE, N. Y.: Ship me one Bolton No. 1 Band Sharpener. (Also ordered other machinery for complete single band outfit). Five months later: Ship me one Bolton No. 127 Band Sharpener. (These sharpeners care for a three-band mill.)

HENRY DISSTON & SONS, PHILADELPHIA, PA.: Ship us one Bolton No. 1 Band Sharpener. One year later: Ship us one Bolton Band Sharpener. These machines are used in the Disston Saw Works at Tacony, Pa.



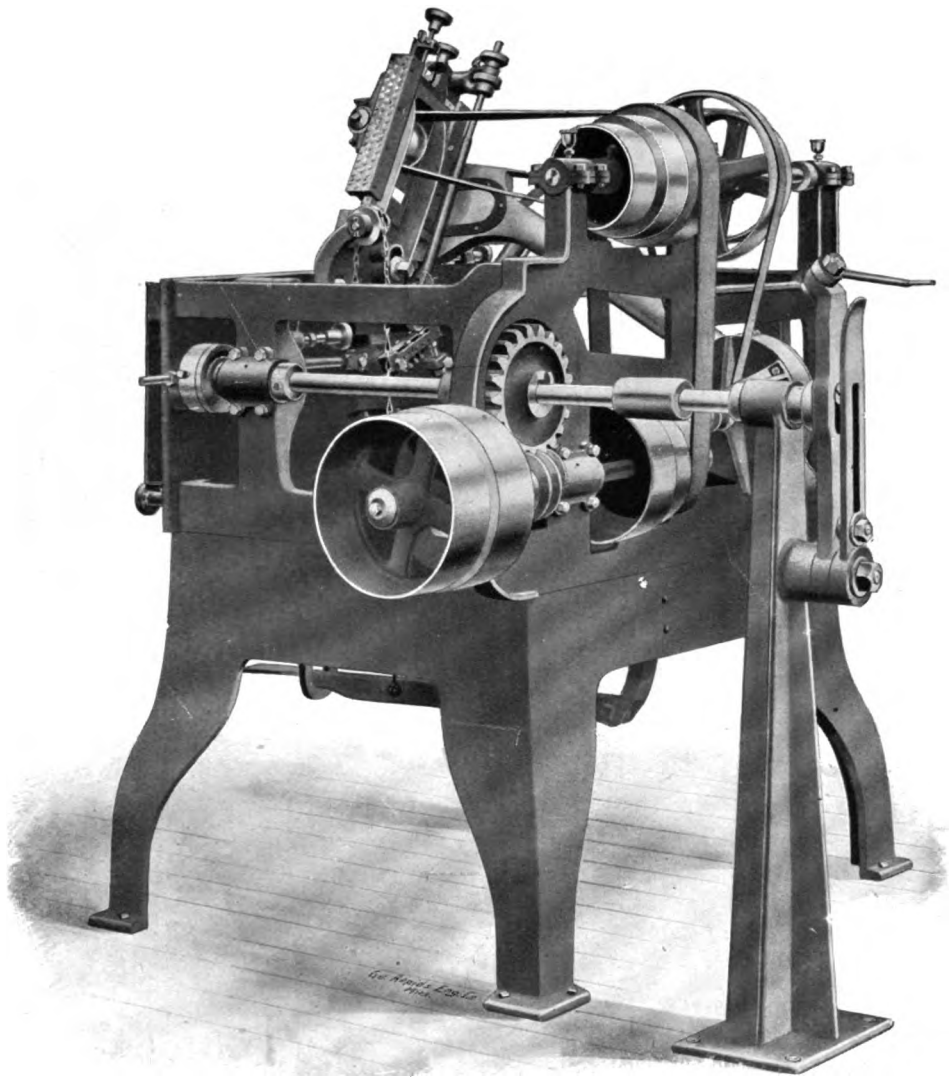
(Sold with unqualified warranty)

**Bolton No. 127 8-12 Inch Band Saw Sharpener, R. or L. H.
Cut Shows R. H.**

	Price	Code Word	Estimated Shipping Wt. lbs.
No. 127 Bolton 8 to 12 in. Sharpener, R or L, no supports for saws.....	\$180 00	Head	950
No. 127A as above, R or L, double feed and post brackets.....	175 00	Headed	1,050
No. 127A as above, R and L, double feed and post brackets.....	185 00	Heading	1,150
No. 127B, R or L, set adjustable pulleys and stands.....	205 00	Headless	1,350

With order give hand of sharpener and style of teeth wanted.

10 Per Cent Advance in Price for Boxing and Delivery f. o. b. cars New York for Ocean Shipment



(Sold with unqualified warranty)

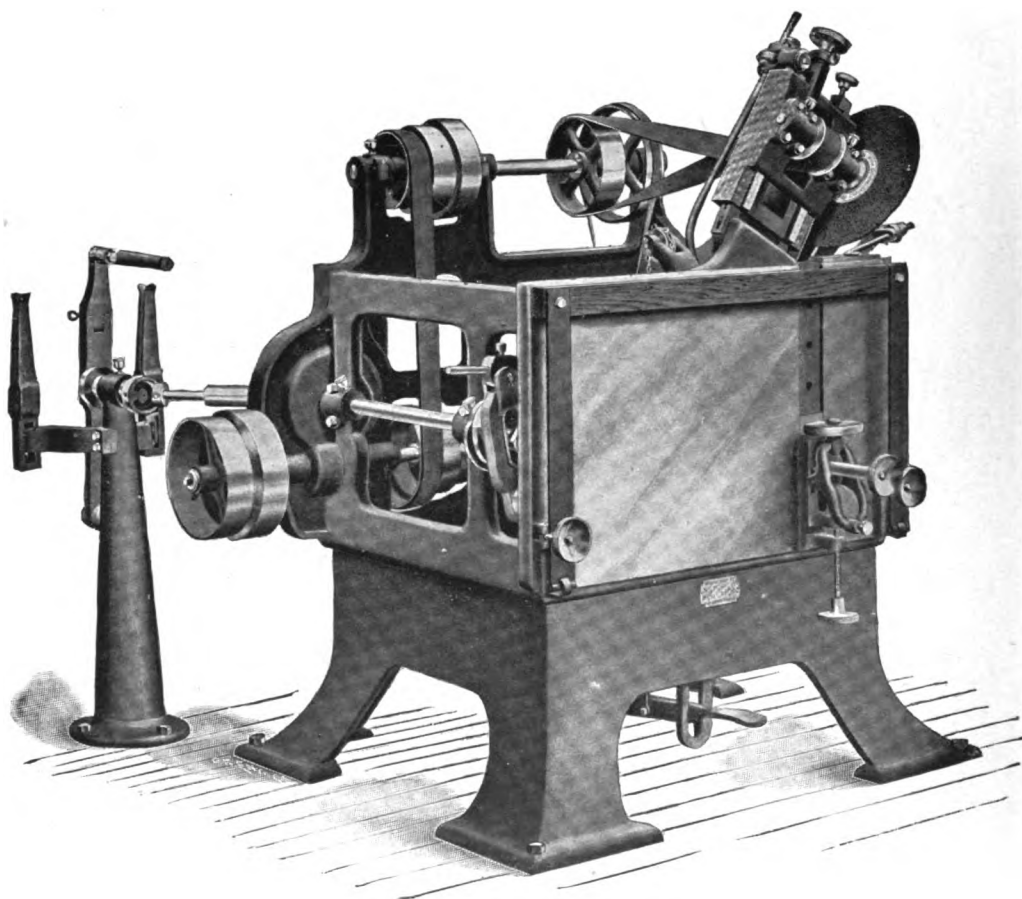
No. 127 Bolton Band Sharpener, R. H.

Cut Shows Rear View.

Driving Pulley
10-inch
3-inch Belt

Speed
600
30 Teeth

Floor Space
37x53 in.
56 in. high



(Sold with unqualified warranty.)

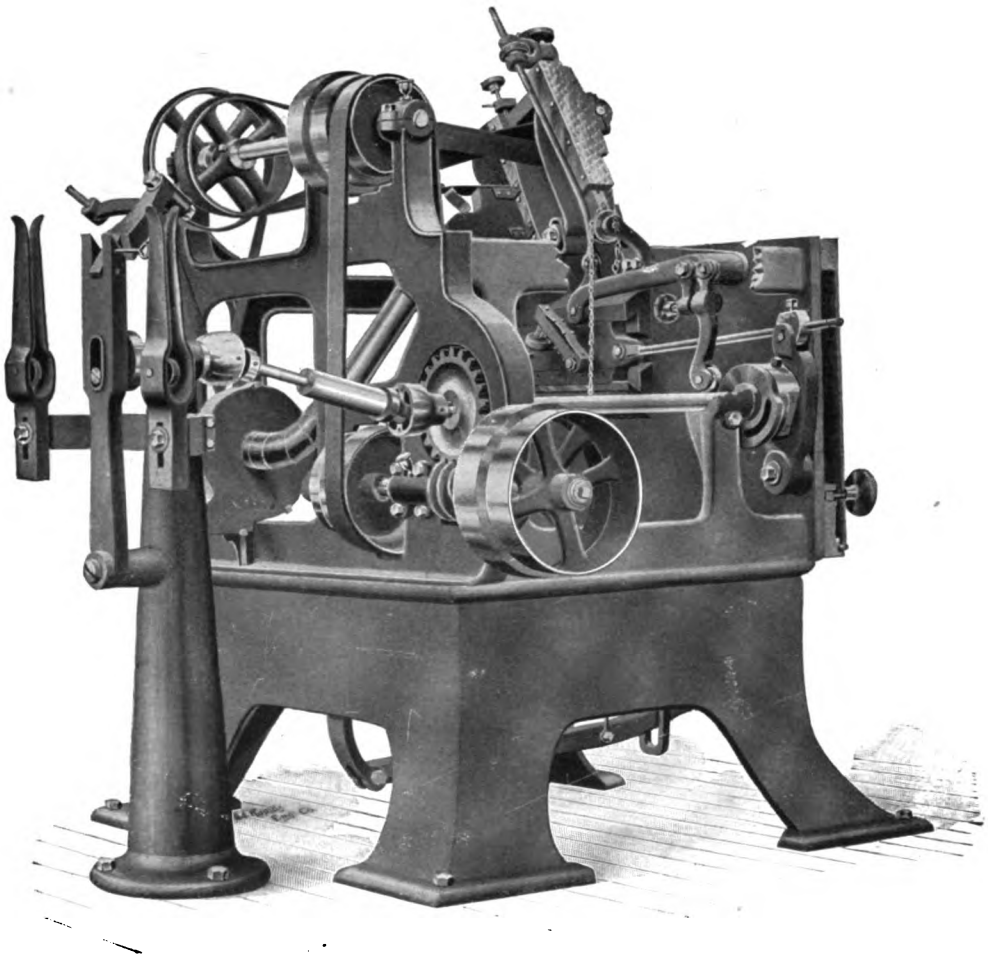
**No. 1 Bolton 14 Inch Band Saw Sharpener, R. H. or L. H.
Cut Shows L. H. Machine.**

All Bolton band sharpeners equipped with belt and wheel, blower and piping for dust.

	Price	Code Word	Estimated Shipping Wt. lbs.
No. 1 Bolton 8 to 14 in. R or L no support for saw or back pawl.....	\$180 00	Magnus	1,400
No. 1A as above, double feed, post brackets, R or L.....	200 00	Magnificent	1,650
No. 1A as above, for both R and L. mill.....	215 00	Magnanimous	1,800
No. 1B, R or L with adjustable pulleys.....	225 00	Excellent	1,800
No. 1C, R and L for double cut bands.....	250 00	Magic	1,950

With order give hand of sharpener and style of teeth wanted.

10 per cent. advance in price for boxing and delivery F. O. B. car New York for ocean shipment.



(Sold with unqualified warranty)

No. 1 Bolton 14 Inch Band Saw Sharpener, R. H. or L. H.

Cut Shows L. H. Back View.

Driving Pulley
10-inch
3-inch Be't

Speed
600
30 Teeth

Floor Space
38x46 in.
60 in. high

At 600 revolutions for T and L pulley, the three speeds for emery wheel will be about 1,400, 1,800 and 2,400.

No. 1, Bolton 4 to 14 Inch Band Saw Sharpener

Our Bolton No. 1 Band Sharpener is the finest working sharpener for wide band saws ever placed on the market.

It is built throughout like a machine tool, of best material and mechanical construction, very heavy and massive and entirely free from vibration when sharpening the widest and heaviest saws.

Capacity, a 14-inch emery wheel and saws 14 inches wide, or less, single or double cutting.

All shafting of $1\frac{1}{4}$ or $1\frac{1}{8}$ inch steel.

All boxes extra long and heavy and provided with brass oil cups. Main slide in head extra long and very heavy, with wear taken up by gib. Pawl carrying slide extra long and very heavy, with wear taken up by gib.

All wearing surfaces have oil chambers and are thoroughly hand scraped to bearing.

Feed finger has quick return; positive stop.

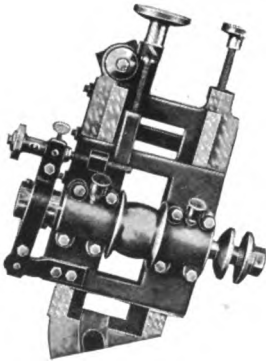
Three-step pulleys afford three speeds for emery wheel to accommodate its size or grade.

The reduced loose pulley relieves the belt strain when machine is idle.

A long, hardwood clamp for saw, capable of giving the saw any desired tension, and hinged to drop downward instantly to admit or withdraw saw, holds the saw stiff and rigid while being fed through the machine. Clamp locked at top of machine when saw is in place to prevent lateral spring.

Emery wheel guard, dust pipe and exhauster to withdraw all dust as made and discharge it at rear base of machine.

Inclination of emery wheel anything from 0 to 45 degrees, by slacking one screw and tilting the head to give the hook desired. The cutting edge of emery wheel is always in the same relative position with respect to the feed finger, whatever the hook.



A LATERAL ADJUSTMENT for emery wheel arbor governs the grinding of emery wheel on tooth. It is a convenient, sensitive and perfect device and no adjustment of feed finger is necessary. Spring washers permit a slight lateral offset of wheel from tooth in case of unduly heavy grinding and avoid liability of case hardening.

Back feed finger device attached to the machine by a UNIVERSAL SHAFT. Pawl device has two brackets with hardened steel idlers to carry the saw. The upper part of pawl lever is hinged to the lower part to admit of pawl being thrown back out of the way of the saw.

Two forms used for shaping the teeth, the pitch and outline of which forms may be varied by operator to produce the different styles of band saw teeth having extreme hook, deep gullet and high back.

A ROTATING FORM for preventing any heating or case hardening of the saw in gullet at base of tooth. By means of this latter form any round gullet may be made, and case hardening—so common in sharpeners—is prevented, and a perfectly satisfactory grinding obtained.

An independently operated clamping wheel with round face, which revolves against the side of saw, is mounted upon the rest for back of saw. This clamping wheel holds saw down when pawl pushes in upper part of face of tooth, as is sometimes the case with teeth of extreme hook, but it in no way interferes with the insertion or removal of the saw.

The machine is built with a slide head, which has a fine adjustment by means of which the wear of the emery wheel is taken up and a uniform grinding throughout the life of the wheel is secured. The head is composed of two slides, one mounted upon the other. The main slide carries the emery wheel up and down. The auxiliary slide takes up the wear of the wheel, so that whatever the size of the wheel in use, the wear of the main slide is always constant.

We recommend the post brackets and double feed device, style No. 1 A, for single cut bands.

The machine will be adjusted to requirement, if order is accompanied with full specifications regarding the saws, and with templet of saw teeth.

The Judgment of Customers. (No. 1 Sharpener)

GEM CITY SAW MILL CO., QUINCY, ILL., CHAS. WISDOM, FILER. The Bolton No. 1A Bolton Band Sharpener, R. H. and L. H., does my work on 14 gauge x 11 inch x 45 feet bands and on 16 gauge x 11 inch x 51 feet bands just exactly the way I want it, and is always ready and in perfect order whenever I want to use it.

It is an elegantly constructed machine, built on the lathe order, everything planed, scraped, turned and perfectly fitted so that there is no lost motion. The castings are all very heavy and nicely fitted, so there can be no vibration. The machine has a quick pawl return and a positive stop, and may be adjusted to any style of tooth readily, by the manipulation of the stop, brass rotating form and the universal form carrying the wheel over the back of tooth. The form device is a great convenience to filers, as one can carry any desired shape of tooth or vary it at will with little or no trouble. The three face cone pulleys enable one to always run the wheel at its proper speed and do beautiful work.

MACOMBER & BALE, LAKEVIEW, MICH. Regarding the Bolton No. 1A Band Sharpener which you supplied us last season can say that we now recommend this machine to be the best machine we ever saw, and if we were in need of another would purchase one of the same kind. We do not know where the machine could be improved in any way.

NORTH PACIFIC LUMBER CO., BARNET, B. C. We have pleasure in stating that all of the machines bought of you have given us very good satisfaction.

WHAT THEY BOUGHT.

No. 1 Sharpener R. H. and L. H., 5A Stretcher and Shear, 10 Power Swage, 12 Hand Swage, 15 Shearing and Crosscutting Machine, 16 Retoother, 18A Brazing Clamps, 21 Lap Grinder, 24 Filing Clamps, 27 Band Wheel Grinder, 28 Swage Shaper, 33 Pulleys and Stands, 75 Circular Sharpener, 80 Hammering Bench, 229 Tool Grinder, 41 Forge, 32 Crack Drill, Leveling Block, Hammers, Gauges, etc.

WHAT THEIR FILER SAYS.

WM. STRESE, BARNET, B. C. The tools are all satisfactory in the highest degree. I have used them all for a season and given them thorough and severe tests and have no hesitancy in saying that they are the best machines of the kind made, and I will cheerfully recommend to mill men your machinery. Kindly take notice of my templet of tooth (2 inch space 1 inch deep, numbers 30 resaw and 31 band saw on plate). This tooth is giving good satisfaction on 14½-inch saws 60 feet long in fir and spruce.

SAWYER GOODMAN CO., MENEKAUNE, WIS. We have now been using the Bolton No. 1 Sharpener for some time and it is giving good satisfaction. It is strong in construction, neat in appearance, and appears to be a first-class machine. We bought this upon the highly colored recommendation of your agent without any personal knowledge of the kind of work you are turning out, and the result is even better than we expected.

UNITED STATES WOODENWARE CO., ESCANABA, MICH., HERMAN BUCHOLTZ, FILER. The No. 1 Bolton Band Sharpener recently furnished to us is a perfect machine in every respect. It is very rigidly built, general adjustments very fine and accurate, and it is without any exception the best machine in the market.

EDDY BROS. & CO., BAY CITY, MICH. We purchased of you this spring one of your Bolton No. 1 Band Sharpeners and have been using the same since our start on the season's work, and it has proven satisfactory in every respect, and we believe it is so constructed as to be lasting, and its good qualities continue to our utmost satisfaction.

THE I. STEPHENSON CO., WELLS, MICH. We have been using your Bolton No. 1 Sharpener for some time and we are well pleased with it. It gives us satisfaction in every way. (Bought another.)

HOBBS, WALL & CO., CRESCENT CITY, CAL. The Bolton No. 1 Band Sharpener purchased from you last spring has been in constant use since its arrival and has given eminent satisfaction. Will say that it is all that you claim for it. Our filer is satisfied with it and has no suggestion to make whereby it might be improved.

LOUIS SANDS, MANISTEE, MICH. The Bolton No. 1 Band Sharpener purchased from you about a year ago is giving perfect satisfaction. It seems to be well proportioned as regards strength and general efficiency and does good work.

FENWOOD LUMBER CO., WAUSAU, WIS. Our Filing Room Outfit, including a Bolton No. Band Sharpener, two Bolton Saw Stretcher and Shear Machines, etc., are all giving perfect satisfaction.

PAINE LUMBER CO., OSHKOSH, WIS., BY GEO. M. PAINE, PRESIDENT. The No. 1 Bolton Band Sharpener of your make we have used ever since we made the purchase, sharpening saws from 3 to 11 inches wide, and very successfully. It is much the best machine we have ever used and gives us perfect satisfaction. Bought another.

D. B. CLARK, FILER FOR PAINE LUMBER CO., OSHKOSH, WIS. Regarding the No. 1 Bolton Band Sharpener purchased of you by the Paine Lumber Co., would say I have been using the machine and am very much pleased with it. There are several things about your machine which should recommend it to every band filer. (1) It is simple in construction, there being no numerous cams and levers to get out of order. (2) It is so easily adjusted to the shape of tooth required, always giving the same shape and size to every tooth in the saw. (3) Best of all, it grinds so accurately without burning the points of the teeth that a file is no longer needed in fitting the band saw.

RAINE & RAINE, EMPIRE, PA. Our filer is delighted with the outfit and says that especially is the Bolton No. 1 Band Sharpener the finest that he ever saw.

RAT PORTAGE LUMBER CO., NORMAN, ONT., H. E. GARLOCK, FILER. Last season this company put in your Bolton No. 1 Band Sharpener and Lap Grinder, and today they wish they had put in one of your Stretchers, as they bought a pair elsewhere that are almost worthless to anybody. Your machines are the best there are in the country.

AMERICAN CAR AND FOUNDRY CO., A. R. ANGELL, FILER, JEFFERSONVILLE, IND. Your No. 1 Bolton Band Sharpener does the best work of any I ever saw, and I have used the Covell, Rich and Halladay. We got one of your Bolton Stretcher and Shears combined, and it does the work and saves me about one-half the work and saves me about one-half the work I used to have to do.

NO. 1C SHARPENER FOR DOUBLE CUTTING BAND SAWS.

For Double Cut Bands we furnish our No. 1C Sharpener, equipped both R. and L. H. with special post brackets having shoes faced with hardened steel for supporting the saw teeth, thus sharpening one edge of the double cut saw at a time in a perfect manner, and the position of the saw enables the filer to swage, sidedress and sharpen and fit complete each edge in succession with but one handling of saw at machine. No difficulty arises in the use of this sharpener on either double or single cut bands, and consequently we strongly advise its purchase by all operators.

No. 1C Sharpener for Double Cutting Band Saws

WESTERN LUMBER CO., LATHROP, MONT., J. V. KENTON, FILER. I am using one of your Bolton No. 1C Automatic Sharpeners on Telescopic Double Cutting Mill, and it gives excellent satisfaction. I will enclose a tracing of the band saw teeth. This is my first experience with the double cut mill, but it goes all right. One has to be very particular in rolling, leveling and fitting the saws, but that is more than compensated by the fact that it brings better pay, does not get short in the back and cannot be pulled off the wheels.

FOSTER WINCHESTER LUMBER CO., SLOCUM, MICH., I. M. THOMPSON, FILER. The Bolton Double Cutting Band Sharpener works finely on double cutting saws. I think my previous experience with it has aided me in getting such good results, but at any rate, I am doing nicer sharpening than I ever did before on single cut saws.

BLODGETT, CUMMER & DIGGINS, CADILLAC, MICH. In talking with our Superintendent about your Bolton No. 1C R. H. and L. H. Sharpener for Double Cut Band Saws, we learn that it is giving very good satisfaction in every respect.

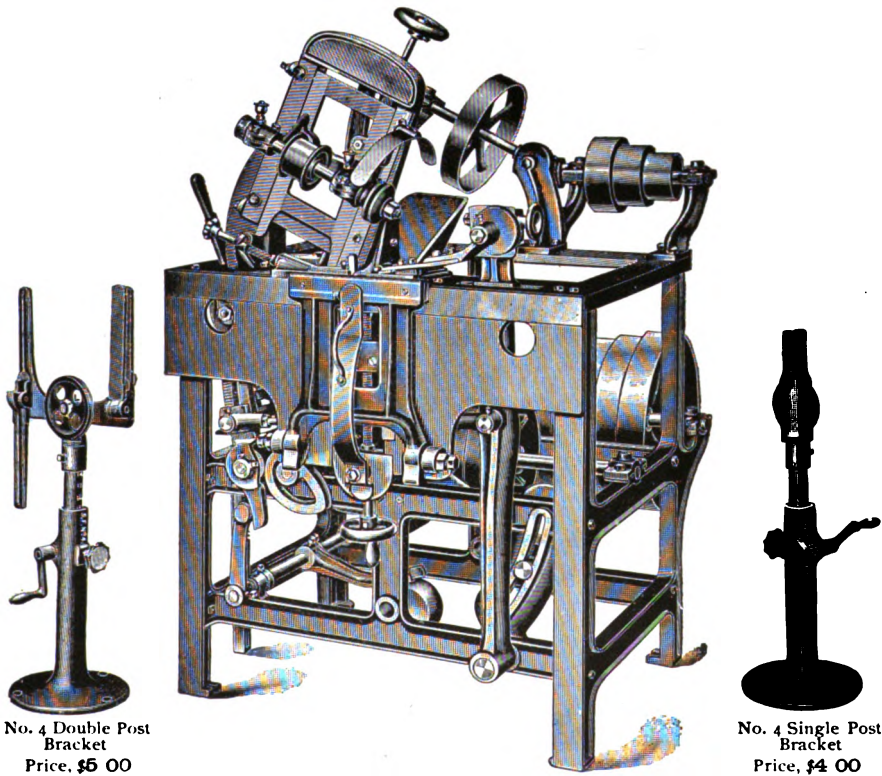
W. L. McMANUS, PETOSKEY, MICH. The Bolton No. 1C R. H. and L. H. Band Sharpener for 14-inch double cut band saws I have tried thoroughly and am very much pleased with it. If you wish more of a letter as testimonial in regard to it, I shall be pleased to write one.

CURTIS & CO. MFG. CO., ST. LOUIS, MO. This machinery (one Bolton No. 1C Double Cut Sharpener in order) is intended for a large western mill, and we want your machines, as we have your Band Sharpener in our saw works and find it very satisfactory, and as we expect to furnish band saws on this job, we want to get in a machine which we know will do satisfactory work.

EDWARD P. ALLIS CO., MILWAUKEE, WIS. We fully appreciate the fact that you manufacture superior machines.

ST. PAUL AND TACOMA LUMBER CO., TACOMA, WASH. We are convinced that the Bolton No. 1 Band Sharpener which we are now operating in this mill is one of the best machines we have had in the filing room. (Bought another for double cut bands.)

J. D. GEBOTT, FILER, PARRY SOUND LUMBER CO., PARRY SOUND, ONT. The No. 1C Bolton Grinder for double cut bands is a dandy, the best machine I ever used.



No. 4 Double Post
Bracket
Price, \$5 00

No. 4 Single Post
Bracket
Price, \$4 00

8 to 14 Inch Covel Automatic Band Saw Sharpener.

(Cut shows L. H.)

		Weight	Code Word	
			Right Hand	Left Hand
No. 160 (double feed and post brackets)	\$200	1250	Brave	Brisk
No. 160A " " " " R. & L. H.	216	1450	Brook	Breed
No. 160B with pulleys and stands	226	1275	Bloom	Blunt
No. 160 boxed f. o. b. New York	\$225.	Approx. Weight	1500 lbs.	50 cu. ft.
FO. 160A " " " "	240.	" "	1650 lbs.	60 cu. ft.
No. 160B " " " "	250.	" "	1650 lbs.	75 cu. ft.
\$5 00 extra for emery wheel and belt.				

Adapted to teeth spaced from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches. Head can be tilted to 45 degrees. Three speeds for emery wheel. Regularly equipped with one double and four single post brackets. If templet of teeth is furnished suitable forms will be supplied to produce the outline of the gullet desired. Drive pulley $12 \times 2\frac{1}{2}$ inches, speed about 200, which will sharpen 27 teeth on slow speed and 33 on fast speed. Size of emery wheel should be 12 inch diameter; arbor hole 15-16 inch; thickness to suit the gullet. Floor space 48×37 inch, height 60 inches.

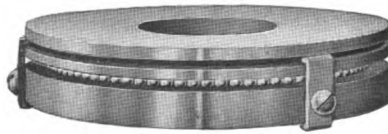
CARE OF SAW STRETCHER ROLLS

We advise every operator of a saw stretcher to send the rolls to us for regrounding, as may be needful. There are many old types of stretchers that have been in use for years, and that, while not in any sense up-to-date, could perhaps be gotten along with if the rolls, which have become worn and out of true, were properly reground. There are some new machines marketed having rolls not perfectly ground, and there is little use to send such rolls back to the original manufacturer. Some rolls in the process of tempering come out less hard than is desirable, and these are bound to show wear. The several machines marketed differ much in the matter of weight, strength and the consequent power that can be exerted by the rolls in the process of tensioning, and the face of the rolls should be ground on a segment suited to the type of the machine and the degree of the pressure obtainable. No stretcher with rolls improperly ground can work satisfactorily, and it may increase instead of lessen the filer's work by reason of dishing the saw, or even by rolling in a twist. Hence, if you have a machine in your filing room that is not working satisfactorily the least expensive and most certain remedy for it is to have the rolls reground, mounted on their own shafts, by some manufacturer who is fully informed regarding the different types of stretchers and the segment grind best adapted to the machine.

WE REGRIND STRETCHER ROLLS.

We have reground the rolls from hundreds of stretchers, comprising every known type, and not in a single instance has our work failed to give satisfaction. Our charge is nominal and will be quoted on request, and the best advice we can give any user of a stretcher is to send the rolls to us if they need grinding, and many mill men make it a practice to send in their rolls as often as once a year, during some shut-down, so that the machine shall at all times be kept in the most effective condition for use. There is no doubt that the advantage resulting to them from this practice insures a big return to them for the trifling expense, and in this way a machine that is in its original make-up all that can be desired in the matter of weight, power and strength and manner of construction, can be kept always in effect brand new.

What the practical man wants is to have his band saws perfectly leveled and tensioned, and to minimize hammer marks and cracking, patching and brazing, to increase his output and reduce his saw bills.



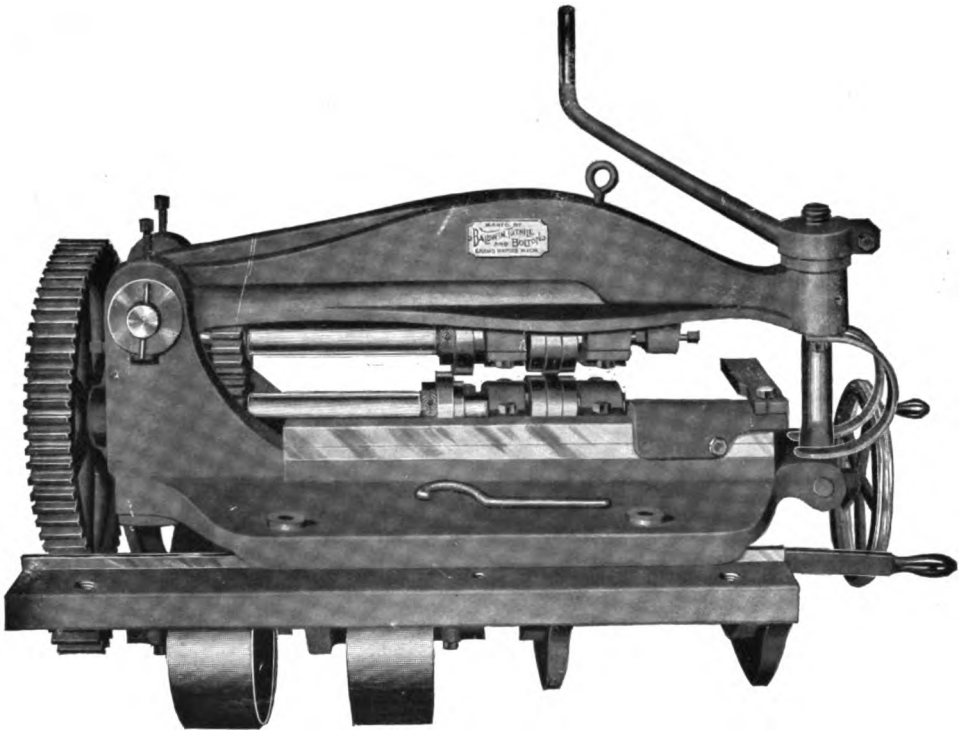
No. 270. Anti-Friction Washer for Saw Stretchers.

Price, \$10.00. Satisfaction Guaranteed. Code word, Washer.

The tool is composed of two disks of hardened steel, grooved on the inner side to contain steel balls, held in position by gibs screwed to the lower disk.

By placing this Ball Bearing Washer on the pressure screw of the Stretcher, the operator can graduate the pressure applied to the saw to such a nicety that he can attain an accuracy of tension rarely if ever accomplished by the solid gripping washer.

Every filer will immediately appreciate the advantages to be derived from a combination which will enable him to apply the right pressure to his saws exactly at the point required and to remove the pressure instantly when desired. In fact, the value of the invention lies in the ease and accuracy with which it can be operated, and no progressive mill man can afford to be without one, as any improvement in the uniformity of tension in the saws means longer life to them and an improvement in the quantity and quality of lumber manufactured.



Bolton Movable 12 or 14 Inch Stretcher and Shear.

No. 5A—Machine complete \$200. No. 5B—Machine without Shear \$190.
Made on order for 14-inch saws.

Approx. Weight.	Driving Pulley.	Speed.	Floor Space.	Code Word.
1100 lbs.	12-inch	150	26x48 inches	(5A) Eureka
	5-inch Belt	30 feet	36 inch high	(5B) Klondike

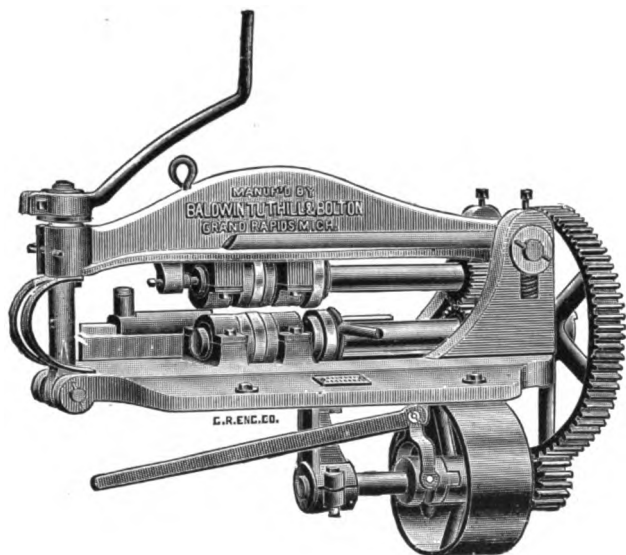
May be furnished with Anti-Friction Washer.
10 per cent. advance for boxing and delivery at New York for export.

The No. 5 Bolton Movable Stretcher and Shear, illustrated above, is our finest machine and is designed for the widest and heaviest single or double cutting band saws, any width up to 14 inches, although sold very frequently for saws of lighter gauge and medium or even narrow widths. It has geared rolls of solid steel, cut gears throughout, lateral movement to adapt the rolls to any part of the saw without shifting the saw itself, this lateral movement obtained by mounting the entire machine on a heavy bed plate having two V tracks, over which the machine moves laterally by screw feed and hand wheel at right side of machine. It has cutters for shearing, whereby the saw may be sheared on either edge in same manner as saw feeds through when being tensioned. It has the reverse motion. This machine has been sold to replace every other make of stretcher, and is in every respect the best machine to use and the best machine to buy, because it is the heaviest, most powerful and best built machine in the market, will tension or act on the hardest spots in the heaviest gauged saws with absolute certainty of affording desired results, with no possible lost motion, no change in the roll shaft bearings with respect to the rolls, while the rolls cannot fail to track perfectly, travel together, with the shafts always parallel and so heavy they will not spring.

FENWOOD LUMBER CO., WAUSAU, WIS. We are using two of your No. 5 Bolton Movable Stretcher and Shear Machines and they are working to our entire satisfaction.

E. W. TILTON, OSHKOSH, WIS. My customers, Hollister, Amos & Co., have the finest stretcher there is (a Bolton No. 5.)

ATLAS LUMBER CO., SEATTLE, WASH. If you will ship us a Stretcher and Shear exactly like the St. Paul and Tacoma machine and will send it on thirty days' trial, we will pay the freight, and if it is satisfactory, will pay for the machine. From what the St. Paul and Tacoma people tell us, we think there is no question but what the machine will give satisfaction. (It gave satisfaction.)



No. 6 Bolton 12 Inch Stretcher and Shear.

No. 6A—Machine with Shear \$160. No. 6B—Machine without Shear \$150.

Made to order for 14-inch saws.

Approx. Weight
850 lbs.

Driving Pulley
12-inch
5-inch Belt

Speed
150
30 feet

Floor Space
26x42 inches
32-inches high

Code Word
(6A) Efficient
(6B) Efficiently

May be furnished with Anti-Friction Washer.

10 per cent. advance in price for boxing and delivery at New York export.

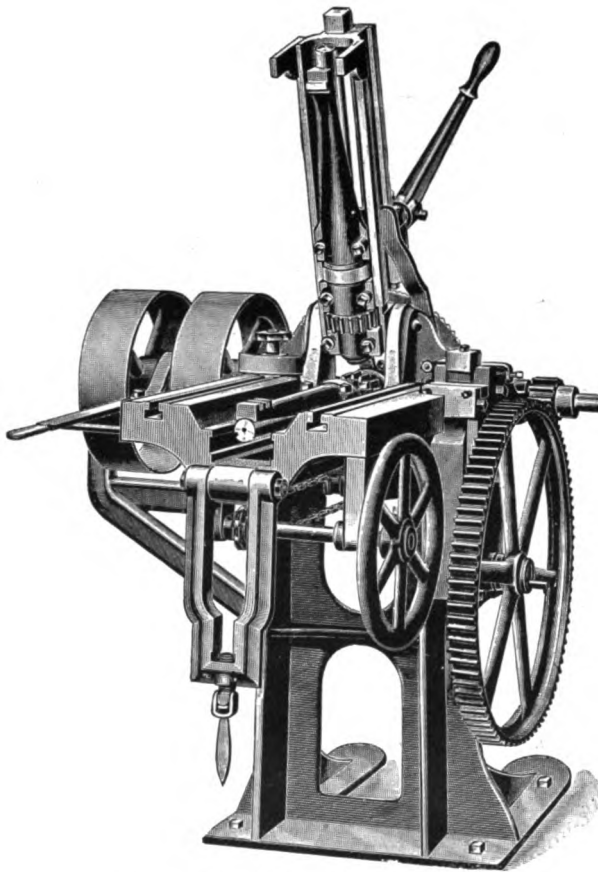
The No. 6 Bolton Stationary Stretcher and Shear, illustrated above, is identical in every respect with the No. 5 Stretcher, except that it does not have the lateral movement feature or reverse motion. If these features are not desired, as is sometimes the case, this machine will serve just as satisfactorily as the No. 5, and all of our remarks regarding the No. 5 apply with equal force to the No. 6 Stretcher. It has been sold most extensively for saws ranging about 8 to 12 inches wide, any gauge.

A. A. HINCHEY, STEVENS POINT, WIS. I have used all makes of Rollers and found none I like so well as yours. I wish you to quote me your best price on your Saw Stretcher and Shear. LATER.—The Stretcher you sold the John Week Lumber Co. a year ago is one of the best machines I have ever used in my life. I have made up saws where I had three or four different widths, and after welding them all together have sheared almost the entire length of the saw, and I claim your Stretcher and Shear is worth its weight in gold in a filing room.

MICHIGAN BARREL CO., GRAND RAPIDS, MICH., J. B. TUCK, FILER. Your combined Band Saw Stretcher and Shear is a perfect machine for rolling and shearing. In three minutes' time I have sheared a 46-foot saw from which the teeth were stripped by striking iron. The machine makes a perfectly clean, straight, smooth cut and leaves the saw in the best possible condition for retooling.

OTIS MANUFACTURING CO., NEW ORLEANS, LA. We sent you some time ago our Saw Stretcher Shears to be reground. Our superintendent advises us that he is in pressing need of these shears at the present moment, as we have struck a number of steel dogs in the cargo of the steamer we are now sawing on, and we therefore ask you to please ship them at the earliest possible moment.

ST. PAUL & TACOMA LUMBER CO., TACOMA, WASH. Please ship us at once one Bolton Movable Saw Stretcher and Shear, as illustrated. We have been induced to place this order with you largely on account of the combination feature which your machine possesses and the very excellent and powerful gear which drives same. The shear feature would be quite an advantage to us, we believe, and while the merits of your machine are not particularly known to us, we believe that you have the best machine on the market. LATER.—We beg to inform you that the Bolton Movable Saw Stretcher and Shear, which we bought of you some time ago, is giving us the very best satisfaction. It greatly facilitates the work in the filing room, and we do not hesitate to pronounce it a most perfect machine.



No. 179 Covel Stretcher and Shear.

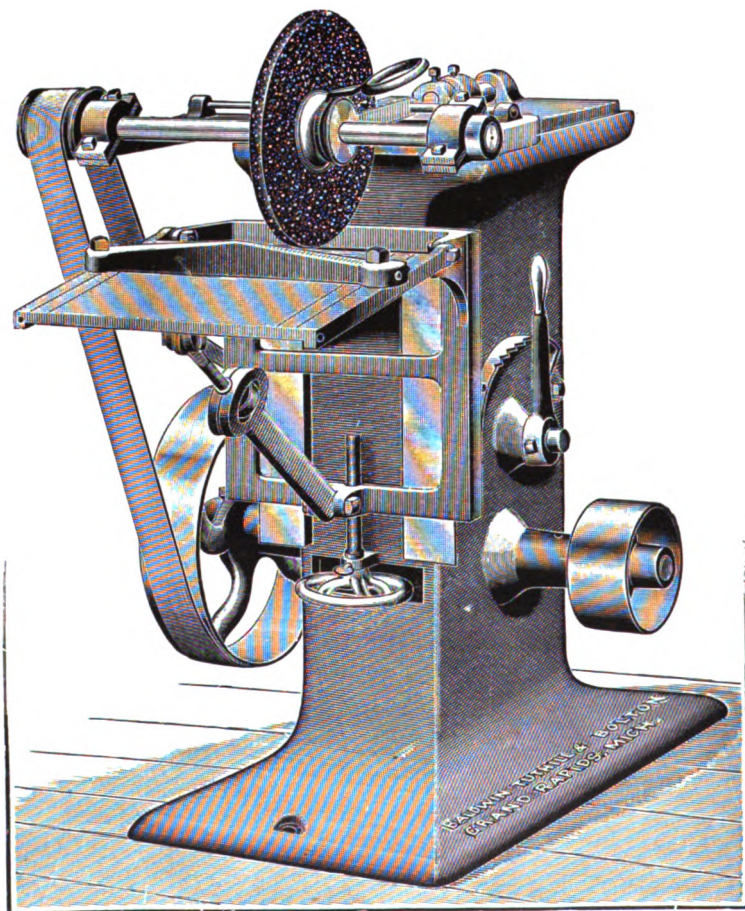
This machine is constructed for stretching or rolling band saws 14 inches or less in width. The rolls are moved across the saw by means of a hand wheel which can be placed on either side of machine. It is provided with shear attachment for shearing a saw lengthways; also a retooter for retoothing band saws, all of which are operated from the same pulleys that operate the rolls. It is made with or without retooter, but all machines have shear attachments. When ordered with retooter we send dies for $1\frac{3}{4} \times 13$ -16 standard tooth with machine unless a tracing of teeth is received with order. The leg is so made that it does not obstruct the saw underneath the rolls while being stretched. It has two clutch pulleys on countershaft so the rolls can be run either way. Pulleys are 13×4 inches. Speed of countershaft about 75 revolutions per minute, which will make the saw travel about 15 feet per minute. Floor space $3 \times 3\frac{1}{2}$ feet. Extreme height 57 inches. Weight with retooter, 850 pounds. Weight without retooter, 730 lbs.

No. 179 Price, with retooter,.....	\$225 00	Code word, Raise
No. 179A Price, without retooter.....	200 00	Code word, Reap
Price, with retooter, boxed f. o. b. New York.....	240 00	
Price, without retooter, boxed f. o. b. New York.....	215 00	

	Gross	Net
With retooter, 1 crate $57 \times 47 \times 44$ inches, $68\frac{1}{4}$ cubic feet.	1050	850
Without retooter 1 crate $57 \times 41 \times 44$ in., $50\frac{1}{2}$ cubic feet.	915	730

THE BOLTON BAND SAW LAP GRINDER

The wheel in grinding has two movements, forward and backward automatically and across the arbor by hand. The motion of the wheel keeps it perfectly square-faced and true, with no dressing required. The machine will grind a smooth, true lap, free from hollow spots, and requires but little, if any, draw filing to finish. The grain of cut runs lengthwise of the saw and fans every particle of steel and emery away from cut. The clamp holds the saw close to the surface being ground. The pitch and height of table



No. 21 Bolton Band Saw Lap Grinder, \$100.00.

(Sold with unqualified warranty)

are readily varied by thumb nut and hand wheel to produce a lap of any desired width. The feed works are inside of column, easy of access. If desired, the automatic feed may be disengaged, making it entirely a hand machine. The machine is furnished with belt, tightener and an emery wheel 34×9 inches, of proper grade for lap grinding. It is highly important that you use a wheel coarse enough for the work. The ordinary saw gumming wheel is not suitable, unless used merely to finish the lap, a method followed by some filers. We furnish suitable lap grinding wheels with our machine and can furnish them for any machine on receipt of full specifications as to size required. We can confidently claim for this machine superior merit and high-grade construction, and know that for convenience and efficiency it is first-class. The machine has met with a large sale and given general satisfaction.

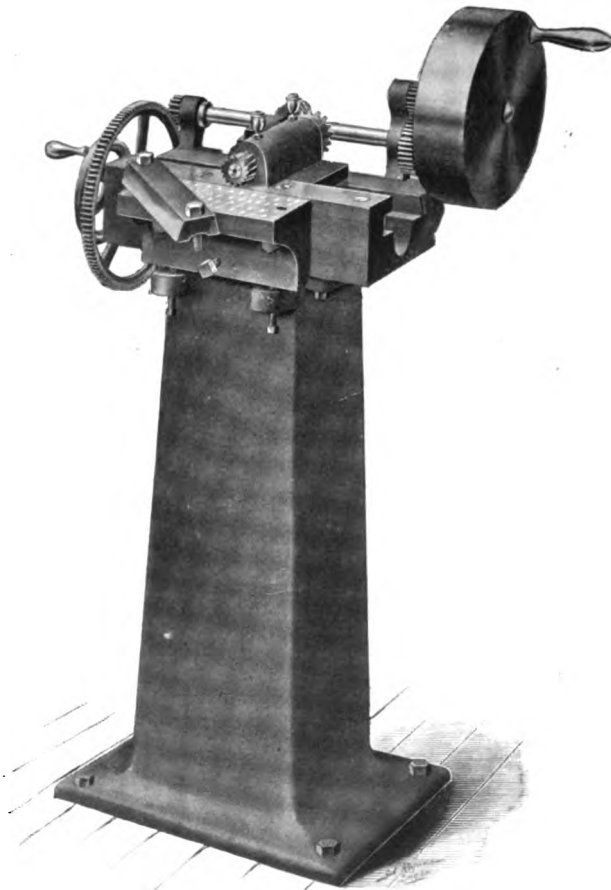
Approx. Weight	No. 21 Price, f. o. b. Grand Rapids, \$100.00	Speed	Floor Space	Code Word
550 lbs.	Driving Pulley	375	18x34 in.; 42 in. high	Best
	6-in.; 3 in. Belt			
	No. 21A For Band Resaws, \$85.00	Code Word, Optimus		

10 Per Cent. Advance in price for boxing and delivery f. o. b. cars New York for export

THE BOLTON BAND SAW LAP CUTTER

A hand or power machine. When run by power at 100 revolutions it mills a lap at the rate of about $\frac{3}{4}$ -inch per minute. The end of saw is clamped to the table, the pitch of which may be varied to suit the width of lap desired. The cutter has an automatic feed across the saw and stops automatically at end of cut. It cuts the lap with accuracy, making a smooth, true surface, and its action tends to force the saw plate down firmly upon the table and thus avoids tendency to cut off too much if there is any high spot. We recommend the use of good lard oil, as this prolongs the life of the cutter and insures the smoothest surface. The cutters are of approved style, of the best steel and finest temper and ordinarily give long service. Two cutters are furnished with each machine, and the relative cost of these is less than that of emery wheels. Price of new cutters, \$1.50. Our cutters are now made with forty spiral teeth. When ordering cutters give date of purchase of machine.

We recommend the Lap Cutter as a very efficient machine on saws of ordinary temper. The cutter will not stand extremely hard steel, but hard saws or spots, if annealed with brazing iron, may be cut easily and perfectly. The cutter affords a smoother and more perfect joint than the emery wheel.



(Sold with unqualified warranty)

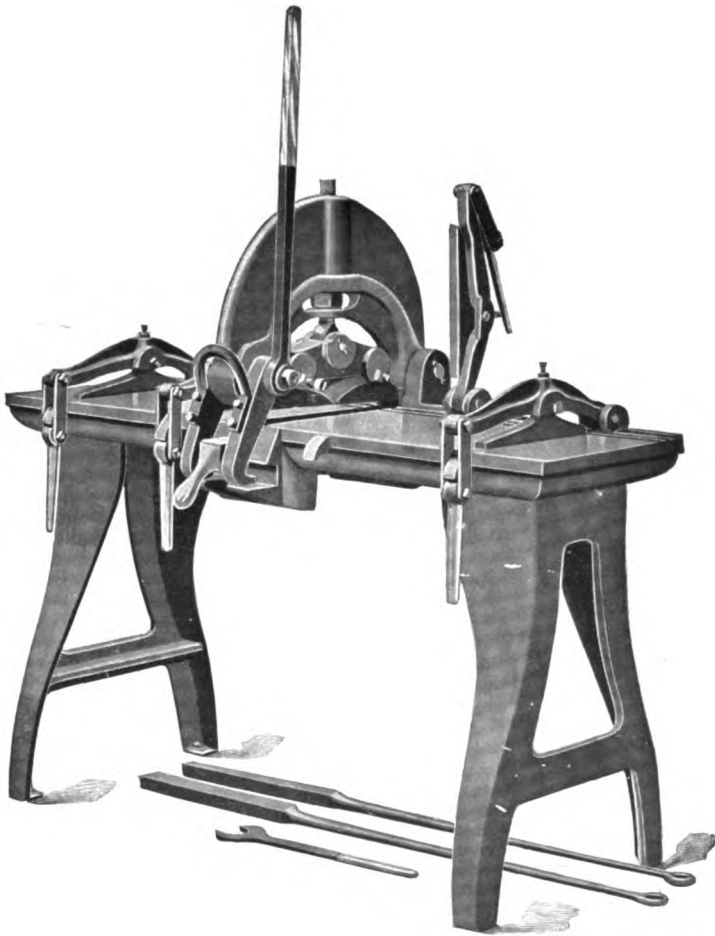
The Bolton Log Band or Band Resaw Lap Cutter.

No. 22 For Saws under 14 inches wide, f. o. b. Grand Rapids, \$90 00
No. 23 For Saws under 8 inches wide f. o. b. Grand Rapids, 75 00

Approx. Weight	Driving Pulley	Speed	Floor Space
No. 22, 350 lbs.	11 in.; 2 in. Belt	60 to 75	25x18 in.; 42 in. high
No. 23, 300 lbs.	11 in.; 2 in. Belt	60 to 75	14x18 in.; 40 in. high

to Per Cent. Advance in price for boxing and delivery f. o. b. cars, New York for Export

Code Word
Universal
Universally



(Sold with unqualified warranty)

No. 18A Bolton 14 Inch Single or Double Cut Band Brazing Clamps, \$65.

Very heavy and massive, furnished with irons

Approx. Weight
600 lbs.

Floor Space

Code Word
Advancing

24x48x44 in.; box, 44x46x50 in.

Boxed for export f. o. b. cars New York, \$75.00

This brazing clamp is much the heaviest and strongest machine in the market and is now used by nearly all operators of wide band saws, either single or double cutting, having been purchased in many cases to replace other machines for similar service, which failed to be effective. In brazing clamps there is only one machine worth considering, and that is THE BEST MACHINE, for there is too much loss of time and labor if a braze fails to hold to justify taking any chances with a weak or poorly constructed brazing clamp. We base our claims for superiority in this machine on its high material and labor cost, great strength, convenient adjustments, and on the statements of numerous filers and mill men who have it in use, are perfectly familiar with all other machines for similar service, and who state unqualifiedly that this machine is the best in use.

The general description of our Bolton No. 18 Steel Brazing Clamps on next page applies to this machine, which differs principally in its greater capacity and material and labor costs. We regularly ship the machine on legs, but will furnish it unmounted at \$5.00 lower price.

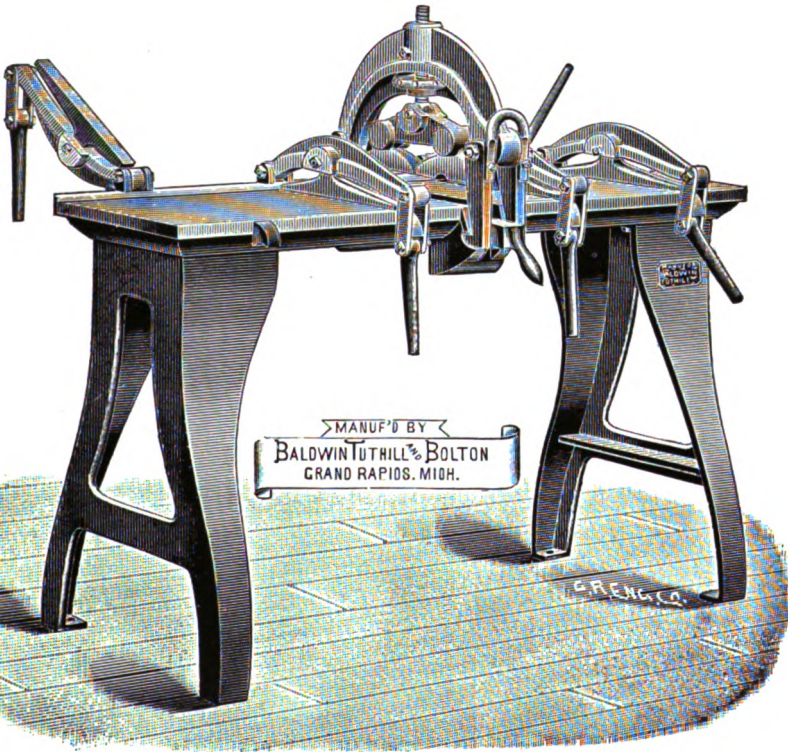
BOLTON 12-INCH STEEL BRAZING CLAMPS

For Single or Double Cut Bands

There is probably no machine in the filing room that is so liable to breakage as a brazing clamp, and every make of clamp has been breakable. To meet the demand for a brazing clamp that combines quickness, simplicity, abundant power, and uniform pressure, we have developed our Bolton Brazing Clamp, which has been improved and so strengthened that it will stand any strain required and effect a perfect braze.

The Bolton Steel Brazing Clamp is positively warranted to be the most powerful, efficient and intrinsically the best machine for brazing wide band saws ever produced. It is practically unbreakable, **ALL THE WORKING PARTS BEING MADE OF STEEL.** It is the heaviest machine on the market, and the quickest, as the side and

main clamps clamp instantly by eccentric pressure. It is the most powerful, as the main clamp, in addition to the great power in the eccentric, may be forced down by means of screw and nut operated by a wrench furnished with machine. It gives perfectly uniform pressure, as the four bearing points of the main clamp distribute the pressure evenly across the entire width of saw. The main clamping yoke has hinged to it at its center a rock bar, to each end of which is hinged a pair of feet, each of which has two bearings on the upper heating iron. This gives four bearings on the irons from one common center, and the pressure is distributed with per-



No. 18 Bolton Large Brazing Clamps, 12 Inch Size, \$50.00.

(Sold with unqualified warranty)

Boxed for export f. o. b. cars New York, \$58.00

fect uniformity across the entire surface of the lap. The main clamp and side clamps may be thrown back out of the way when not in use. The pressure is obtained instantly, with no chance for the irons to cool. The lower iron rests on a sliding wedge, which fits in a planed way, affording a square, even rest for the iron and maintaining its surface in any position square with the top of the planed table. Stop pins are used in the table when brazing narrow saws. When the lap is ready, by drawing out the wedge a short distance, the lower iron may be handily removed, heated and replaced exactly as before, the wedge being pushed back against the adjustable stop at rear of machine. The wedge readily accommodates any thickness of iron and brings the face of lower iron flush against the saw, whatever the thickness. This is a material improvement over other machines. The bed plate and yoke are very heavy and will not spring. The heating irons are regularly made 1 by 1½ and will insure a braze, but will furnish them of any desired size. Nothing is spared in material or workmanship to make it first-class. The machine will please the most critical. We regularly ship it mounted on legs, as shown, but will furnish it **UNMOUNTED AT \$5.00 LOWER PRICE.**

No. 18 12 in. machine Approx. Weight 350 lbs.

Floor Space 24x48x40 in.

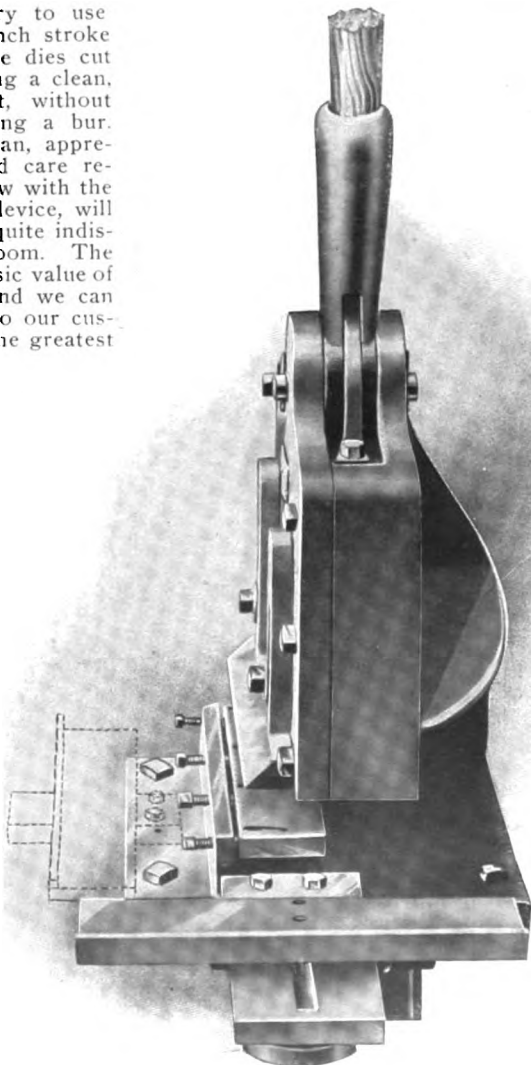
Cord Word Advance

Price \$50

No. 15 Bolton 14-inch Shear and Cross Cut Machine \$50

(Nearly 1000 Sold)

In deference to an urgent demand for a heavy, powerful and long-clip shear adapted both to cross cutting a 14-inch saw at one stroke, preparatory to lap grinding, and to shearing either the back or toothed edge of a band or gang saw we have produced the machine illustrated, which cannot fail to please the most critical. The guide for saw, shown in cut, is in position for shearing crosswise, and it may be quickly shifted to side of machine preparatory to use lengthwise. The long 14-inch stroke insures rapid work, and the dies cut with a perfect shear, making a clean, smooth, straight edge cut, without buckling the saw or leaving a bur. Every saw filer and millman, appreciating the time, labor and care required in cross cutting a saw with the use of a chisel or similar device, will agree that this machine is quite indispensable to every filing room. The price is as low as the intrinsic value of the machine will permit, and we can confidently recommend it to our customers as one possessing the greatest excellence and utility. The machine is thoroughly well built in every detail, is adapted to any gauge of band or gang saws, with leverage easy and powerful. It is a time saver and a labor saver, and has given perfect satisfaction in every instance.

**BOLTON 14 INCH
SHEAR No. 15 \$50.**For Cross Cutting or Shearing
Band or Gang SawsApprox. Weight
350 lbs.Floor Space,
16x24 in., 24 in. high
Code Word
Shearing10 per cent advance
in price for boxing
and delivery f. o. b.
cars New York for
export.Sold with
Unqualified
WarrantyWe also make a
7-inch cross cutting
clamp and chisel
device at \$8 or a
12 inch size at \$10

NELSON TENNEY LUMBER CO., MINNEAPOLIS, MINN. We have used the Shearing Machine all summer, both on the band saws, which are 14 gauge, and our circular saws, which are 7 gauge, and it seems to stand the work very well.

PINE TREE LUMBER CO., LITTLE FALLS, MINN., M. C. DAVIS, FILER. The Shearing and Cross Cutting Machine is a good thing and is needed in every filing room.

MENOMINEE RIVER LUMBER CO., MENEKAUNE, WIS. We have given the Bolton Shear, recently bought of you, a good, fair trial, and we find it meets the conditions every time. We are very much pleased with it, and as far as we have gone we are entirely satisfied with it.

Bolton Retoother and Shear

For Single or Double Cut Bands, Gangs or Resaws.

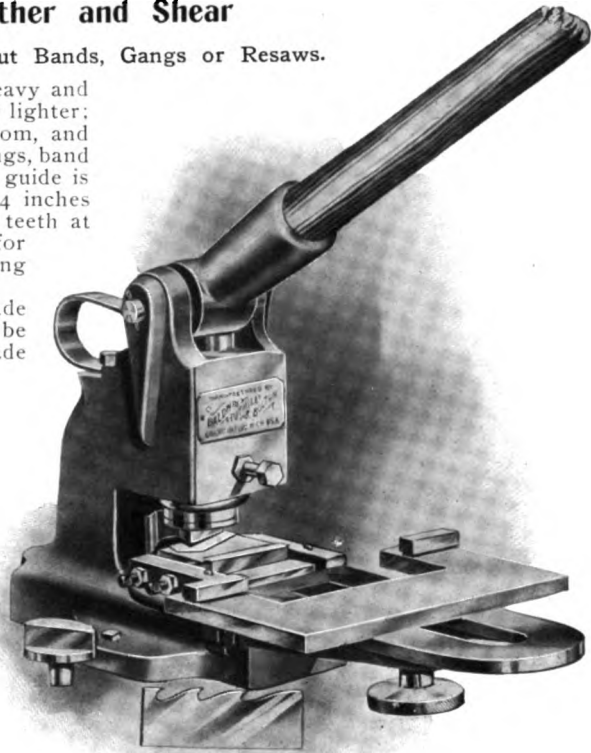
This machine is abundantly heavy and powerful for saws of 12 gauge or lighter; is a necessity in every filing room, and has been furnished for bands, gangs, band resaws and light circulars. The guide is adjustable to saws from 2 to 14 inches wide, and may be set to punch teeth at any desired hook. The spacer for teeth will afford a uniform spacing of any length.

The dies for retoothing are made with open throat in order to be readily sharpened, and are made standard shape or to suit any templet, as ordered. The dies act with a perfect shear, making a clean, smooth, true cut, without buckling the plate or leaving a rough edge. The shear cut and big leverage insures a rapid, easy working machine. All working parts are made of the finest steel, tempered by an expert, and give lasting and satisfactory service.

(Sold with unqualified warranty)

No. 17 Bolton Retoother and Shear, \$45.

Send Templet of Teeth with Order



Owing to the many variations in the shapes of teeth used in different mills, we much prefer as a means of perfectly suiting our customers to receive a templet of the gullet preferred, and the dies will be shaped accordingly. We have furnished sets of dies for this machine with spacing from $\frac{1}{4}$ to 2 inches, depth and shape of throat as per templet. **ADDITIONAL SETS OF DIES FOR ANY ORDINARY SERVICE WILL BE FURNISHED AT \$10.00 PER SET.** It is marketed for log cross cut and small circulars on special order.

This retoothing and shearing machine is the best of its kind in the market and has never failed to suit, and machines in use for years are unimpaired.

The machine is quite indispensable in any band, gang or band resaw filing room, for use in refitting saws that have been injured by striking gravel or iron, or for preparing a piece to braze in, or for toothing blank blades. **SEND TEMPLET OF TEETH WITH ORDER.**

No. 16—Bolton Retoother, dies made to templet, **\$35.00**
No. 17—Bolton Retoother and Shear, dies made to templet, **\$45.00**

Approx. Weight,
125 lbs.

Floor Space
12x30 inches
15 inch high

Code word.
No. 16 Retoother
No. 17 Sheartooth

BOLTON RETOOTHING AND SHEARING MACHINES.

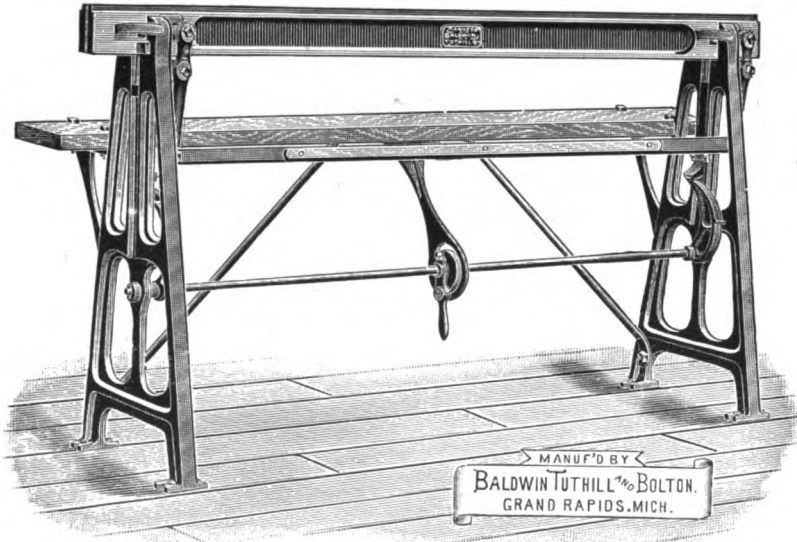
A. J. BURTON, FILER, MARIONVILLE, PA. I can shear a 44-ft. saw with teeth $1\frac{1}{2}$ inch in twelve minutes, and retoothe it in thirty minutes by hand, and when retoothed, the saw will run and cut much better than one with a number of brazes in it. Your machine works fine.

THE BUFFALO PLANING MILL CO., BUFFALO, N. Y. The Retoother and Shear which we bought of you about a year and a half ago has given us the utmost satisfaction, and we do not see how any well regulated mill can do without such machines.

JEANNERETTE LUMBER & SHINGLE CO., JEANNERETTE, LA., N. E. HUFF, FILER. The Bolton Retoother arrived a few days since and I have cut teeth in two new double cutters with it. It works O. K. I have mounted it edgewise and cut the teeth in saw with saw resting on sharpener post brackets so as to insure a uniform hook.

Bolton 72-inch Band Saw Filing Clamp.

Our Band Saw Filing Clamps are the longest, heaviest and most convenient in use. The jaws are planed to hold the saw as in a vise the entire bearing length. The rests for support of back of saw are adjustable to any width of saw. The machine is constructed with a table for tools and is particularly strong, rigid, well made and handy to use. There is nothing about it to wear out or give out. Intrinsically, it has much the best value of any filing clamp made.

**No. 24 Bolton 72 Inch Band Saw Filing Clamps.**

(Clamps for Gang Saws made specially to suit saws between tabs.)

No. 24 For Single Cut Bands, \$50 00.

Special Jointer attached extra. \$5 00.

Code Word, Joint.

Approx. Weight
350 lbs.

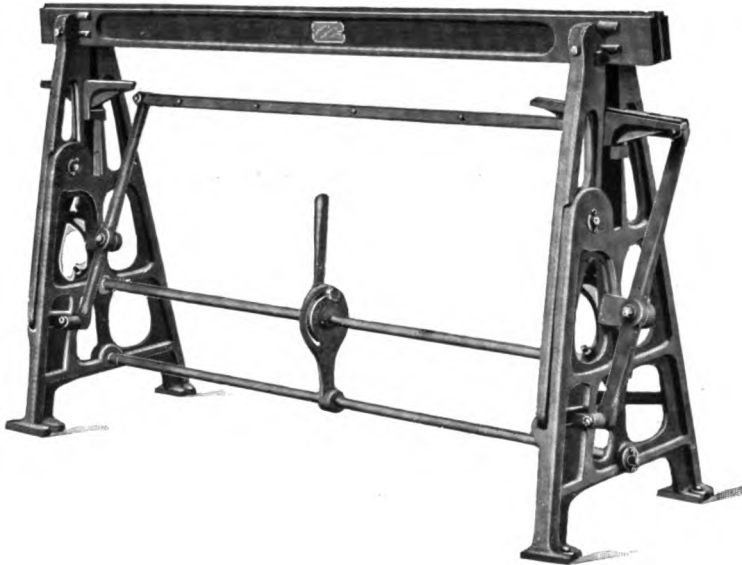
Floor Space
20x74in.; 40 in. high

Code Word
Unexcelled

10 per cent. advance for boxing and delivery at New York for export.

72 Inch Open Jaw Filing for Double Cutting Band Saws

Double cutting band saws require a filing clamp made with one jaw to swing open while saw is being removed or inserted. Our clamp is so constructed that by merely throwing the clamping lever, one jaw swings open eight inches, and when required for use, the opposite throw of clamping lever instantly clamps the saw. It is also provided with two swivel rests, instantly adjustable vertically to suit the width of saw, these rests being faced with hardened steel, over which the points of the teeth slide as the saw passes through. This clamp meets perfectly every requirement of double cut bands, and is equally efficient for single cut bands and more convenient than the ordinary type of single cut band filing clamp, because of the opening jaw.



Approx. Weight,
350 lbs.

Floor Space,
20 x 74 in.; 40 in. high.

Code Word
Unexcelable

Special Band Saw
Joiner. \$5 extra

No. 24A Double Cutting Band Filing Clamp, \$65.00.

BOLTON PONY BAND OR BAND RESAW FILING CLAMPS.

A filing clamp or vise is a necessary device for use in fitting up band resaws. Our clamp is very quick and handy, made of iron throughout, and should be mounted on a stand or bench in line with saw, next to sharpener. The clamps have planed jaws, giving a perfect bearing on saw, and are clamped or released instantly by a quarter turn of the hand wheel. The rests for back of saw are adjustable to suit any width of saw within the capacity of the machine.



No. 25. 36-inch Filing Clamp for
Saws up to 7-in. wide f.o.b.
Grand Rapids.....\$15 00

No. 26. 42-inch Filing Clamp for
Saws up to 10-in. wide,
f. o. b. Grand Rapids.....\$20 00

Approx. Wght.	Floor Space,
No. 25, 100 lbs.	10x12 in. 38 in. h.
No. 26, 150 lbs.	12x14 in. 44 in. h.

Code Word,
No. 25, Expedient
No. 26, Expediency.

(Sold with unqualified warranty)

10 per cent. advance in price for boxing and delivery at New York for export.

Band Mill Wheels and Band Wheel Grinding.

Band Mill Wheels must be turned and ground on their own shaft and have a standing as well as a running balance. Nearly all mill builders and operators agree that a perfectly flat wheel is best, regardless of the diameter or width of face of wheel, but where crown is used on say a 9-foot wheel with 12-inch face, it should never exceed 1-32-inch, and on wheels of smaller diameter and face, must be proportionately less. The more crown on the wheels the more tension is required in the saw, and the greater is the strain on the saw, and general practice demonstrates that band saws last longer, have a better "set" on the wheels, and will stand a heavier feed if the wheels are perfectly flat face than if they have even a little crown, and it may be accepted as something of a defect in any band mill if it is necessary to resort to crown in the wheels to keep on the saw.

The refacing or grinding of band mill wheels at the mill is a simple process, but being one to which some millmen have not yet accustomed themselves, by reason of lack of suitable grinding machine, or one which they think can be put off to "a more convenient season," is thus ignored and put off, with an almost certain loss from cracked saws and poorly cut lumber as direct results.

There comes a time to every band wheel when it is unprofitable to longer run it without regrinding, and there are three ways whereby this regrinding can be accomplished: (1) By sending the wheels away to the maker. (2) By having a man bring a machine to the mill for the purpose. (3) By making use of one's own machine. The question of cost enters into each one of these methods, but it is unquestionably the case that the individual ownership of a band wheel grinder at mill, which is always ready for use when occasion requires, thus insuring a more frequent truing-up of wheels, is the cheapest and best method.

Care of Band Wheel.

Too much care cannot be taken of band wheels to keep them clean and true, and it is obviously to the interest of every millman and filer to prevent the wear so far as possible.

There are numerous devices employed for cleaning the wheels, and if a scraper is used for this purpose, one made from copper or brass is considered preferable to one made from steel, although the latter is commonly in use. The lower band wheel wears much faster than the upper, owing to the greater tendency for sand, dirt, sawdust, gum, etc., to collect on its face, and the greater wear will be near the tooth edge. Every possible precaution must be taken to avoid this accumulation of foreign matter on the wheel and saw. Sometimes the box or pit is not made deep enough to permit the escape of the sawdust, and if not the lower wheel will cause a suction in the dust box and dust will be carried in under the saw and affect both wheel and saw. Have the dust box plenty large enough and place the dust conveyor directly under the dust as it falls from the teeth, and this trouble will be avoided.

A little spray of water run on the saw will prevent friction on guides and in the cut and keep the saw cool and assist in keeping it clean. The stream of water should strike the saw above the top guide, but too much water will tend to cause the saw to vibrate. A little live steam used on the upward motion of the lower wheel is a good thing for winter sawing, for it takes the frost out of the wheels and prevents the gum and dust from collecting. Some use a scraper bolted hard up to the lower wheel, but this is objectionable, as the scraper tends to wear the wheel, and if the wheel is worn unevenly the dust and gum will stick all the more. The best way is to place a scraper close to the wheel, within about 1-64th of an inch, and wear will then be avoided. Fasten a stiff hemp brush against the wheel, pressed on with a spring. This will not wear the wheels and will brush off any little bits of wood or bark that pass under the scraper.

Many operators, especially those running band resaws, use kerosene oil for cutting and preventing the accumulation of gum on band wheels.

Some filers use a mixture of kerosene and machine oil and clean the wheels with this when necessary. If a saw, by reason of being too narrow or improperly tensioned or improperly lined, should run back on wheels, or if a burr is left by sharpener in grinding, or if the swaging should strike the face of wheels, this would contribute rapidly to the wear. A lumpy saw would likewise cause greater tendency to wear than a saw perfectly leveled. It is obvious that in spite of all precautions, the tendencies to wear exist. It is also obvious that if the diameter of front edge of wheel is changed by wear, the strain on the edges of the saw changes, and the back edge may thus be subjected to greater strain, while the front edge will tend to snake. As a result, the saw manufac-

tures poor lumber and very likely becomes distorted in tension and begins to crack.

There is no question at all that there is a large loss resulting to many millmen who attempt to run their band wheels under these defective conditions, which are certain to cause an increased expense for saws and a decreased output as regards quantity and quality.

It is impossible for any filer, no matter how competent, to overcome by a more careful fitting or tensioning of the saws, defects in the face of band wheels, and while the economical regrinding of band wheels necessitates the ownership of a band wheel grinder for the purpose, and the expenditure of a certain amount of time and labor, the refacing of wheels as frequently as desirable will return a large profit on the cost.

There are occasions when the ownership of a wheel grinder at mill will easily pay for itself in a single using, by saving the expense of a prolonged shut-down and of getting a machine hurriedly. Such ownership also permits and insures a more frequent grinding of wheels. There is probably no band mill whose wheels cannot be improved by a grinding at least once a year, and in many cases more frequently.

The band wheel grinder is essential to a complete equipment, and if anyone questions this he need only compare the original cost and the interest on the investment, with the price of a few saws ruined by cracks, or the loss of only a thousand feet per day in output, or but 25 cents per thousand in market value, arising from poor manufacture. It is the old proposition over again, that it pays to spend a dime to save a dollar, but some millmen are slow to find this out.

The Band Wheel Grinder

Band Wheel Grinders may be divided into two classes, one class being constructed on the principle of the grinding lathe, requiring power independent of the band mill to run the emery wheel, and the other having the emery wheel feathered on its shaft, and driven by frictional contact with face of band wheel. In selecting a machine for this work it should be considered less important to make a temporary saving in first cost and more important to select a heavy, well-built and substantial machine, for the reason that such construction is absolutely essential to freedom from vibration and accurate, smooth grinding. Rigidity and strength in any kind of emery wheel machinery is of the utmost importance, and the machines that possess these features, together with the best mechanical construction, are always the cheapest to buy, even though the highest priced.

The setting up of the grinder will be governed entirely by the style of the machine and the facility with which it can be got into position to do the work on the various styles of log band and band resaw mills. But it should be securely bolted to substantial supports and the main slides or arbor must be carefully lined with band wheel shaft, that an even diameter on both edges of band wheel shall result. The emery wheel should be of suitable grade and hardness for grinding cast iron and must be a free, easy cutter that will not glaze or heat the face of band wheel. Never force the grinding, as this will only tend to wear the emery wheel and to grind the band wheel unevenly. The final cut should be light and with special regard to securing a smooth, true surface. Water may be used with good results.

The band wheels should be run slow, as slow as the engine can be made to turn them over at uniform speed. Hand turning of band wheels should be avoided if possible, as it is not uniform. After grinding it is a good plan to test the circumference of each edge of band wheel with a steel tape as a final proof that the edges are of the same circumference and diameter. The time required for grinding a band wheel depends directly upon its condition and may vary from five to twenty hours or more.

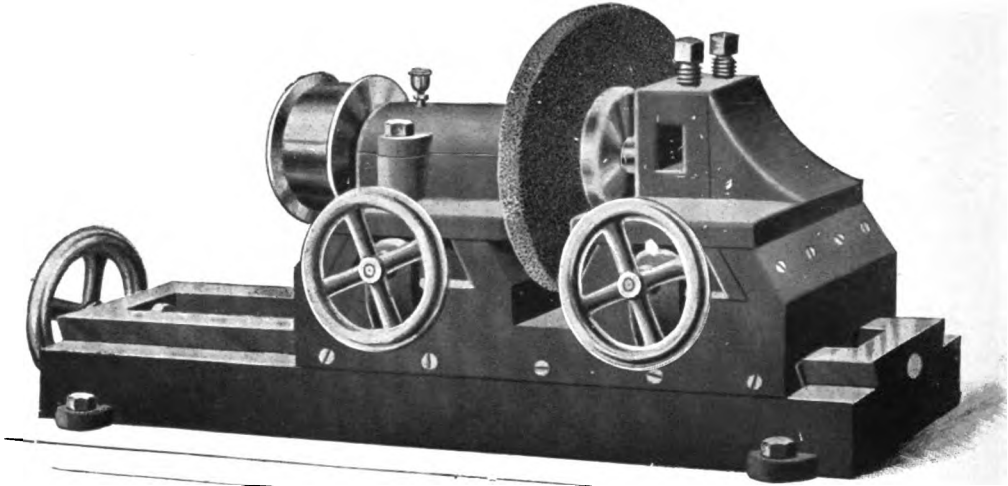
In grinding practice the band mill wheels are run from ten to thirty-five turns per minute. In any event a moderately slow speed is essential, and a very slow speed is essential if being turned with the tool.

The emery wheel may run variously from 1,200 to 1,500 revolutions per minute, although the recommended speed for a wheel of this size, unless rather soft, is 1,500 revolutions per minute.

The general principle that a soft wheel should run faster, and a hard wheel slower than the average recommended speed for the size must apply to these wheels as to all others, and the speed may therefore vary faster or slower, according to the action of the wheel at work in each mill.

With either the Bolton or West Grinders, we furnish a 12-inch emery wheel, one inch thick, of proper grade and hardness for the work.

No. 27 Bolton Band Wheel Grinder with Emery Wheel and Tool Attachment



(Sold with unqualified warranty)

Price complete with one 12x1 inch emery wheel and tool, f. o. b. Grand Rapids, \$90 00

Approx. Weight Boxed, 450 lbs.	Driving Pulley 5 inch 3 inch Belt	Speed 1200 to 1500	Floor Space 12x36 inch 18 inch high	Code Word Results
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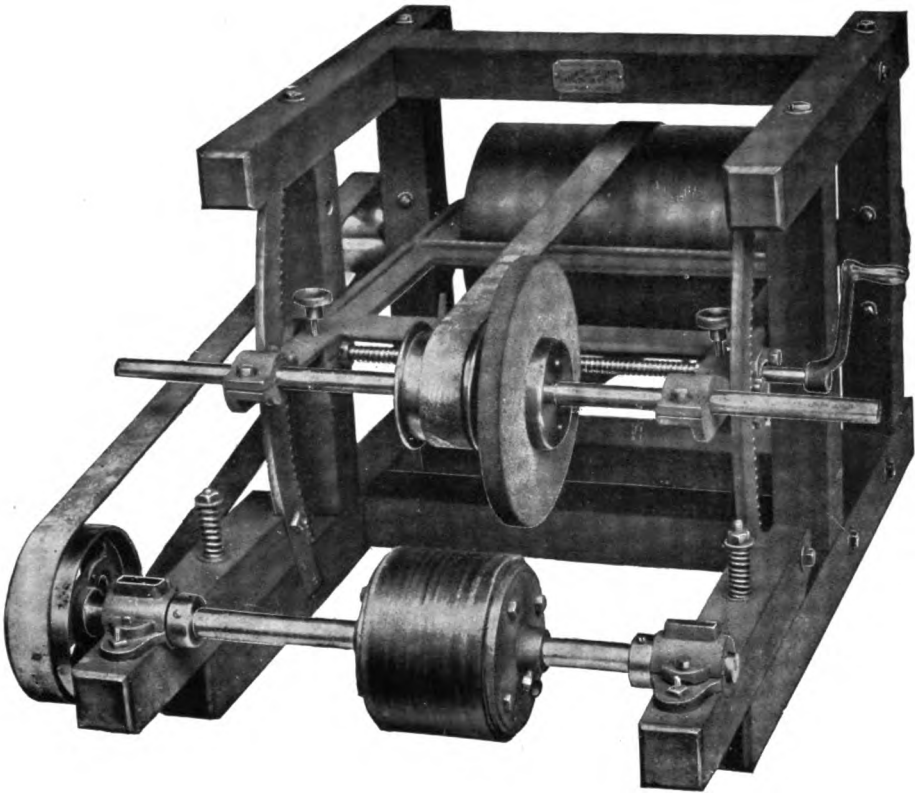
This machine has been designed to meet the demand for a high-grade, thoroughly well-constructed, efficient machine, provided with both a tool attachment for turning and an emery wheel for grinding, the latter being always essential and the former desirable where, if much dressing is required, time can be saved by taking a preliminary cut with the tool. The machine is provided with a single lateral feed and two independent direct feeds, one for the emery wheel and one for the tool, so that these may be used independently or together if desired, the tool taking the first cut, followed by the smoothing grind of the emery wheel. This insures a remarkably smooth, true surface, with a distinct saving of time.

The machine is thoroughly well built, the slides being particularly heavy and hand scraped to bearing, and an abundance of metal being used to render the machine free from vibration. It is used by a large number of mills and has uniformly given satisfaction.

SALSICH & WILSON, STAR LAKE, WIS., E. L. WILSON, FILER. Some one has stolen the catalogue you sent me a year ago, and I wish you would send me another. The Bolton Grinder you sent us for turning off the band mill wheels is the best I ever used.

ANDERSON-TULLY CO., VICKSBURG, MISS. Give us your very lowest price on your machine for grinding off the face of band wheels. We think you make the best machine of this kind there is on the market. We have received the Patch Machine and are sure it will give satisfaction.

10 per cent. advance for boxing and delivery at New York for export.



No. 128 West Band Wheel Grinder, \$100.00.

Patent No. 599374, Feb. 22, 1898

Approx. Weight
400 lbs.Friction
8-inch diameterSpeed
425Floor Space
36x51 in.; 27 in highCode Word
Resulting

This machine is designed to be driven by frictional contact between pulley at lower front end of machine and the lower band wheel of mill. For some mills a single setting of the machine is sufficient for grinding both band wheels. The frame that carries the emery wheel is pivoted at the rear, and by means of rack and gear, operated by a crank, the emery wheel arbor on front of frame may be swung up or down to contact with upper or lower wheel, as required. A screw feed affords lateral movement of emery wheel across the face of the band wheel.

The paper friction at front of grinder which contacts with face of band wheel, to drive the machine, is eight-inch diameter with six-inch face, and when run 425 revolutions per minute will speed emery wheel 1,500. This speed is not arbitrary, but for twelve-inch emery wheels of medium hardness is approximately correct. An eight-foot band wheel, run with engine slowed down, should turn from thirty to thirty-five revolutions per minute.

GRAYS HARBOR COMMERCIAL CO., COSMOPOLIS, WASH. We understand that our friend Mr. West has sent to you his Band Wheel Grinder to have you manufacture same for the market. We used this machine about nine months ago and find it is just what we want. Kindly advise us how soon you could ship us one of these machines and your best price for same.

to Per Cent advance in price for boxing and delivery at New York for export

Necessity of a Band Wheel Grinder

Every operator of a log band or a band resaw mill can much better afford to own one of our Band Wheel Grinders than he can afford to continue the operation of the mill with face of wheels badly worn and out of true, a sure cause for the cracking of saws, poorly manufactured lumber, extra saw bills, and much extra work and trouble for the saw filer. Moreover, it is well nigh impossible for a filer to tension band saws to run well on band wheels that are defective. The case is one that does not call for a tonic, but an absolute cure of the disease.

We are sometimes asked if an "expert mechanic" is required, and relative to this we may state that we have supplied Band Wheel Grinders for use with probably every size and make of band or band resaw mills made in the United States and Canada; we have never sent a man to operate the machine, but rather the work has been performed by the local filer or millwright and, so far as we can learn, with entire success. Regrinding of band wheels should be done during a shutdown or when other repairs are being made, so that there shall be no loss by reason of enforced idleness of the plant. The work rarely takes a day's time and we are confident that any practical man can perform the work with entire success and at a minimum expense.

We do not rent Band Wheel Grinders, because it is more economical for each mill operator to purchase a machine outright and have it always at hand for use as required. The fixed cost of the investment is a very small matter to any operator, and in most instances the wheels ought to be refaced one or more times yearly, as long as the mill is operated.

The large demand coming to us for these machines and the uniformly prompt payments received for them have demonstrated to us even more conclusively than the testimonial letters, some few of which we publish, that we are justified in recommending our Band Wheel Grinders strongly to all prospective customers, with entire confidence that they will give perfect satisfaction.

J. J. SITZLER, FILER JAMES H. DYKEMAN, BROOKLYN, N. Y. I have used your Bolton Band Wheel Grinder and it is O. K. and does splendid work.

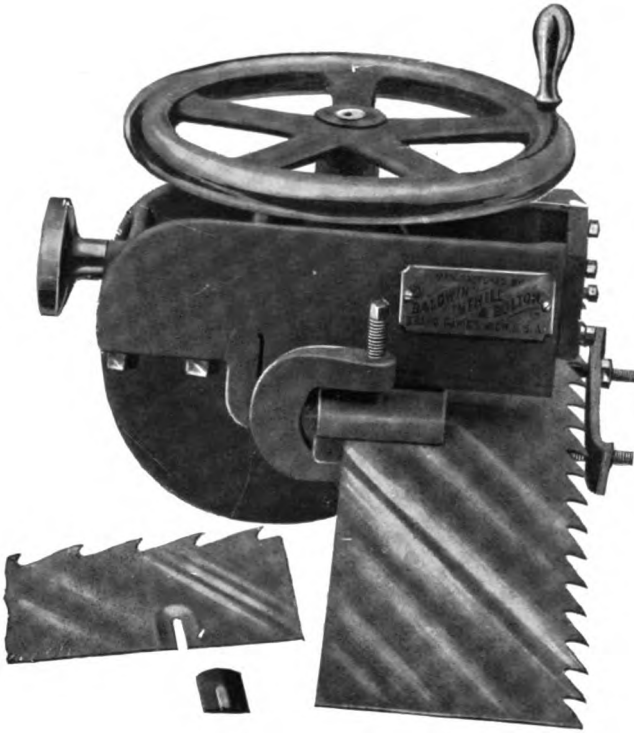
E. W. LEECH, LODI, O. Your Bolton Band Wheel Grinder gives us the best of satisfaction. There was a marked difference in the running of the saws after its use.

MARY E. SEELYE, EXECUTRIX, SPENCER, N. Y. Your Bolton Band Wheel Grinder arrived after you traced it and has done good work.

SOME CUSTOMERS FOR BAND WHEEL GRINDERS.

Fraser & Co., Ottawa, Ont.	West Side Lumber Co., Tuolumne, Cal.
Geo. Chew & Son, Midland, Ont.	Est. David Ward, Deward, Mich.
C. L. Ritter Lumber Co., Clay, W. Va.	S. Alfred Seelye, Spencer, N. Y.
L'Anguille Lumber Co., Marianna, Ark.	Wilson Cypress Co., Palatka, Fla.
Brownell Drews Lumber Co., Morgan City, La.	Boyne City Lumber Co., Boyne City, Mich.
Kentucky Lumber Co., Burnside, Ky.	North Pacific Lumber Co., Barnet, B. C.
James H. Dykeman, Brooklyn, N. Y.	Southern Supply Co., Norfolk, Va.
Crossett Lumber Co., Crossett, Ark.	Stuart Lumber Co., Brinson, Ga.
Mack Dickinson & Co., Tower, Mich.	Wilson Adams & Co., N. Y.
Mishler Lumber Co., New Madrid, Mo.	Plummer Mill Co., Buffalo, N. Y.
C. C. Putnam & Son, Montpelier, Vt.	Globe Lumber Co., Sibley, La.
Dickson Lumber Co., Norfolk, Va.	A. Lewis Lumber Co., Fisher, La.
C. R. Cummings & Co., Houston, Tex.	Foster Winchester Lumber Co., Slocum, Mich.
Dierks Lumber & Coal Co., DeQueen, Ark.	Covel Mfg. Co., Chicago.
Norwood Mfg. Co., Tupper Lake, N. Y.	A. H. Stange, Merrill, Wis.
N. W. Cooperage & Lumber Co., Gladstone, Mich.	Markt & Struller Co., New York.
Miss. Lumber Co., Quitman, Miss.	Sabine River Lumber Co., Draughton, Ark.
E. C. Atkins & Co.	Holland & Grave, Byng Inlet, Ont.
W. G. McCain & Sons, Neva, Tenn.	Haak Lumber Co., Haakville, Mich.
Giddings & Lewis Mfg. Co., Fond du Lac, Wis.	Kentucky Lumber Co., Williamsburg, Ky.
H. M. Loud & Sons Co., Au Sable, Mich.	J. O. Batey, Manistee, Mich.
Lobdell & Bailey, Onaway, Mich.	Lufkin Land & Lumber Co., Lufkin, Tex.
Prewitt Spurr Mfg. Co., Nashville, Tenn.	R. H. Churchill, Marinette, Wis.
Baker Box Co., Worcester, Mass.	St. Paul & Tacoma Lumber Co., Tacoma, Wash.
Empire Lumber & Mining Co., Crandall, Tenn.	East Jordan Lumber Co., East Jordan, Mich.
Waterous Engine Works Co., Brantford, Ont.	J. & T. Jardine, Rexton, N. B.
Pardee & Curtin Lumber Co., Sutton, W. Va.	West & Slide Mill Co., Aberdeen, Wash.
Tracadie Lumber Co., Tracadie, N. B.	Riechman Crosby Co., Memphis, Tenn.
Red Cypress Lumber Co., Macon, Ga.	Beck Mfg. Co., Penning, Ont.
Southern Sawmills & Lumber Co., Kingsdale, N. C.	Hall & Kaul, St. Mary's, Pa.
Eby Machinery Co., San Francisco.	F. Kell, Gumberry, N. C.
Lock Moore & Co., Westlake, La.	Inman Poulson & Co., Portland, Ore.
	Truckee Lumber Co., San Francisco, Cal.
	Allis-Chalmers Co., Milwaukee, Wis.

Repair of Cracked Band Saws



Patch Machine, 2 cutters with four 3-inch patches **\$30**

Code Word, Patcher

Approx. Weight, 150 lbs. Boxed, 16x13x13

Additional patch strips in gauge to suit saw, 3-inch lengths each **25c**. Shorter lengths to order at same price. These patch strips fit perfectly the groove milled by cutter and require no fitting unless cutting to length. Some users prefer patch strips one gauge heavier than saw plates to insure firmer pressure of iron on patch. Order for machine or patch must give gauge of saw.

Extra Cutters, **\$2.50** each. (Cutters are now made with ball bearings.) Silver Solder, any width, per oz., **\$1.25**; per 6 oz., **\$6.00**. Stock sizes $\frac{1}{2}$, $\frac{3}{8}$, $\frac{1}{4}$, $1\frac{1}{4}$. We recommend $1\frac{1}{4}$ solder for patch brazing.

There are a good many more mills that need Patch Machines than there are that don't. Everyone should investigate our process.

10 per cent advance for boxing and delivery f. o. b. New York for export

SOME POINTERS ON PATCHING CRACKS IN BAND SAWS.

Requirements: A Bolton Patch Machine, Brazing Clamp, Silver Solder, Brazine, Patch Strips.

The sole purpose of the patch machine is to mill the groove or seat for the patch. This is a short and simple process. The saw, patch and solder are to be cleaned with Brazine or suitable acid in ordinary manner. The patch strips require no fitting other than cutting to proper length. There is nothing about patch brazing that differs from full width brazing except that you must hold the patch properly in place. The proper exercise of care in this is entirely foreign to the patch machine itself, and if a saw filer fails in this part of the work, he can blame only himself. Many hundreds of filers are using our machine successfully on log bands and band resaws of all gauges in common use, and there is no more question about the efficiency of a patch machine than of a swage, sharpener, stretcher or any other essential filing room equipment.

PREPARATION OF GROOVE FOR PATCH.

By our method the patching of cracks involves two processes: (1) The cutting or milling of groove or seat to receive the patch along the line of crack, this being accomplished by the patch machine; and (2) the brazing in of the patch, furnished with the machine and shaped ready to fit the groove perfectly, and in gauge to suit the saws in use, whether log bands or the lightest band resaws. The cutter mills the groove, starting from either edge of saw required, the machine being operated and the cutter fed by hand power. A groove can be cut at the rate of an inch every five minutes at an ordinary speed, and should be cut on the inside of saw. The machine is intended to make it possible to check and repair cracks before they extend far into the saw, so as to impair its life or feeding qualities, and as the patch applied is only an inch long, more or less, instead of a braze from six to fourteen inches wide, you save the cutting in two and consequent shortening of the saw, the time and labor required to repair the laps and to fit up and straighten a full width braze, and you restore the strength of the saw at the

crack, and render effective saws already worthless or fast becoming so, and hence soon likely to be condemned. We recommend the use of a good lard oil when cutting the groove, and if the saw is extremely hard or casehardened, the steel may be annealed at the crack with hot blacksmith tongs, to avoid liability of injury to the cutter. Run the cutter forward, never backward.

Look over your old saws. The repairing of one saw will pay for the machine twice over.

ANDERSON & TULLY CO., VICKSBURG, MISS. Please ship by express two feet of patch strip for 15 gauge saw. Also two feet of patch for 18 gauge saw. We find the patch machine a fine thing for the filing room and would not be without one.

F. W. TUER, HUNTSVILLE, ONT. I have used your Bolton Patch Machine and find it does all you claim for it, as a patch can be put in as easily as cutting a saw for a braze. All millmen should have one.

C. COUTTS, PARRY SOUND, ONT. We have tried the Patch Machine and it works to our entire satisfaction. We draw the temper out of the part of the saw that is cracked and find that the cutter works twice as easy and will last far longer.

STETSON CUTLER & CO., ST. JOHNS, N. B. The Patch Machine ordered from you is giving entire satisfaction.

W. L. M'MANUS, PETOSKEY, MICH. The Patch Machine shipped me on approval for use on my double cut band saws has been given a fair trial and has proven a success.

POKEGAMA SUGAR PINE LUMBER CO., KLAMATHON, CAL., N. B. HAYNES, FILER. On my recommendation this company bought a Bolton Patcher. The machine is O. K. and they like it.

BEAVER CREEK LUMBER CO., DAVIS, W. VA. In reply to your inquiry as to our experience with Brazine, we have been using the fluid in our mill for some months past, both in making laps and patches, with the most satisfactory results, and it gives us pleasure to recommend it. We have found that laps as well as patches made with Brazine are much neater, run more smoothly and last much longer than when made with ordinary brazing acids; in fact, a braze made with this fluid makes the saw practically as good as new.

PINE TREE LUMBER CO., LITTLE FALLS, MINN., IRA L. WARREN, SUPERINTENDENT. We purchased from you last summer one of your Band Saw Patching Machines and are very much pleased with it. At the request of Mr. John Weyerhauser, we wish to place an order with you for one for the viz.: The Nebagamon Lumber Co., Lake Nebagamon, Wis.

C. R. WISDOM, FILER, GEM CITY SAWMILL CO., QUINCY, ILL. For the Patch Machine, I will say that in my judgment there is no doubt as to its success; it is simply constructed, easily manipulated and does accurate work. The most prejudiced must acknowledge, when they are forced to, that a patch properly put on is, by far, better than a braze and much easier and quicker made. I recommend this machine to all users of band saws.

F. W. AYER & CO., BANGOR, ME. Please send us by freight one Bolton 14-inch Shear; one Bolton Band Saw Patch Machine; six additional Patch Strips.

S. K. PALMER, FILER, F. W. AYER & CO., BANGOR, ME. Your Patching Machine is all right. Have patches in constant use. It has paid for itself many times over. With slight changes it could be used on center cracks.

J. D. GEBOTT, BEAVER CREEK LUMBER CO., DAVIS W. VA. I have brazed in two patches, one on the outside and the other on the inside, as a matter of experiment, but have not had time to find out which is the best.

LATER—I now have in practical use seven patches. The first one I put on the outside, but find the inside is the proper place to put them. I have had very good success and the machine is bound to be a winner. I have three patches that you can scarcely find that are over 1½ inches long. A practical filer will readily see the inside is the place for patch.

GEO. W. SHEARD, CLINTON, IA. I have been making patches instead of making a braze for three years, and know it is better. You can keep your saws of one length. You do not heat the saw clear across the blade with the brazing irons and so leave the part aside from patch as good as ever and do not have bother of having to keep straightening up a braze.

JAMES LITTLE, HUMPHREY, ARK. If all the filers value the use of a good patcher as much as I do, they would all want them. It is well known that where a crack occurs in a saw the tension of that place is lost, but you can braze in a good, solid patch and restore the tension as before the crack occurred and with one-fourth the work of making a regular braze, and the saw still remains the proper length.

MITCHELL BROS. & CO., CADILLAC, MICH. Please ship us one Patch Machine. Please enter our order and ship to Jennings, Mich., 50 patches for use with the Patch Machine.

BRAZINE

A SCIENTIFIC CHEMICAL COMPOUND
DISCOVERED AND INVENTED BY

MR. J. D. GeBOTT

A Practical Saw Filer of Wide Experience

4 oz. Bottle, \$2.00; by Mail Registered, \$2.21.

½ oz. Sample, 40c; by Mail Not Registered, 44c.



No Borax, Acid or other Chemicals Required with Brazine.

The practical saw filers everywhere are enthusiastic in its praise. We have been sole agents for the sale of Brazine, during which period we have not had a single report unfavorable to it, and we recommend it as a thoroughly good article, abundantly worth its price. If you use it once you will become a regular customer.

DIRECTIONS FOR USING BRAZINE.

After the laps are ground see that there is no case harden; if any, remove by draw filing. Clean off the laps by pouring a little Brazine over both parts, removing all grease and foreign substances, wiping dry with a clean, white cloth. Clean solder with fine emery cloth (do not use emery cloth for any other purpose.) Place the saw in clamps and heat your irons in the ordinary way. See that they are of even heat throughout entire length when placed on the saw; true face and free from scale, push the scarfed ends apart, pour enough Brazine over the lower part to dampen both ends, covering every part of the laps. Place the parts over each other again and put in the solder, applying the iron in the usual manner. Do not use borax or any other flux in connection with Brazine. Keep bottle well corked when not in use. Brazine is especially adapted for patch brazing and used in same manner.

SIMONDS MFG. CO., FITCHBURG, MASS. We have made use of the sample bottle of Brazine and we find it works acceptably. Send us 1 dozen, large size.

A. J. BURTON, BAND FILER, APALACHICOLA, FLA. I have tried the sample bottle of Brazine sent me, and I must confess it works first-class, as the silver don't spatter over the saw when I use it, as it does with acid. Besides, the saws and tools don't rust up so badly by its use as they are so liable to do by using acid, and it is away ahead of borax, for borax will carbonize the steel at that point and is liable to make soft brazes. But so far I find the Brazine way ahead of anything I have yet tried, as it is a dead sure thing to make a braze with Brazine, and I cheerfully recommend it to any filer who is desirous of making an up-to-date braze.

JOSEPH IRELAND, DAVIS, W. VA. I have been using your Brazine fluid for some time and find it to be the finest article I have ever used for brazing purposes. Am using a lap cutter and soak the milling tool in oil. Brazine removes all grease and insures a braze, as well as a patch, every trip, and I can heartily recommend it to my friends and others in my line.

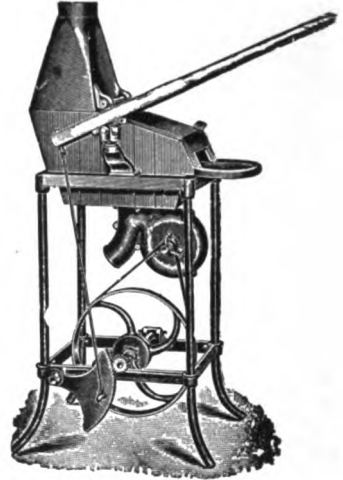
LIEBERMAN, LOVEMAN & O'BRIEN, NASHVILLE, TENN. We have received and used the sample bottle of Brazine you sent us recently, and find it to be a first-class article for the purpose of brazing saws. You will please send us either by express or mail, whichever is cheaper, two bottles of Brazine, and oblige.

J. A. HOUSTON, DAVIS, W. VA. This is to certify that I have worked in the file room with Mr. J. D. GeBott for over a year, and I have always taken an active part in helping with the brazing of saws. I have been following the sawmill business for a number of years, but have never seen brazes hold and last as well as those made with Brazine. We have tried to take apart several old brazes for experiment, but could not do so without the use of hot irons. I heartily indorse the use of Brazine to anyone following the band saw business.

BEAVER CREEK LUMBER CO., DAVIS, W. VA. In reply to your inquiry as to our experience with Brazine, we have been using this fluid in our mill for some months past, both in making laps and patches, with most satisfactory results, and it gives us pleasure to recommend it.

Special Band Saw Brazing Forge

The cut below illustrates a new forge for heating brazing irons uniformly for 14 inches, which meets the requirements of band mills. It has a closed cast-iron hood, which makes it safer from fires than any other forge made. A common stovepipe can be used to conduct the smoke outside the mill. Coal, bark or wood can be used to heat the irons with; dry bark will heat the irons in this forge better than coal will in the common forge. The two irons are in such shape that the fire will be uniform. The size of the base is 8x16 inches. The blast is produced with a fan driven by a segment and pinion, operated with a lever. The motion is imparted to the band wheel by a ratchet clutch. The shafts are steel, with cast-iron boxes that are adjustable, which makes it durable and light-running. Every piece can be duplicated, making it cheaper to repair. The shape and size of the hood makes it less expensive to use than any other forge. To use bark, clean out the base by taking off the caps and cleaning out the ashes, then build the fire with light wood and dry bark; fill up the hood and allow this to burn down to live coals, then lay the irons onto the rest back and front. Do not allow the irons to rest upon the coal to pack it tight—keep the fire loose—then place more bark over the irons, shut down the cover, and allow the fire to burn up while you are getting the splice ready for the irons. During this time the irons will get hot enough for use; if not, a little blowing will make them hot and not burn up the irons, and the irons will last much longer and you will be more sure of a perfect job. This forge is designed only for brazing purposes, and is not intended for a variety of work. If you want an all around forge, buy the ordinary open hearth portable.



**Special Band Saw Brazing
Forge NO. 41**

Price, f. o. b. Grand Rapids, \$30 00

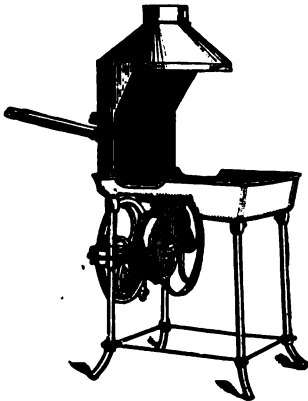
Weight, 300 lbs.

Floor Space, 6 sq. ft.

For Export, 10 cu. ft.

Code word, Braze

No. 41 Boxed for Export f. o. b. New York, \$40



**OPEN HEARTH
PORTABLE FORGES,
BLOWERS**

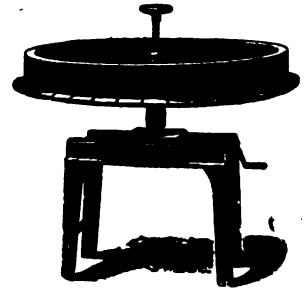
NUMEROUS STYLES AND SIZES.

No.	STYLE	Style of Hearth	Fan	Weight	Price
0	Hood, Coal Box and Rest.....	28 x 40	14	295	\$25 00
0	Hood, Coal Box and Water Tank.....	28 x 40	14	318	27 00
1	Half Hood.....	21 x 27	10	150	20 00
2	Closed Hood.....	21 x 27	10	160	21 00
3	Shield.....	21 x 27	10	145	18 00
4	Half Hood.....	18 in. diameter	8	90	13 50
5	Shield.....	18 " "	8	90	12 00
6	Closed Hood.....	18 " "	8	100	15 00
7	Shield.....	14 " "	8	50	8 00
8	Closed Hood.....	14 " "	8	55	9 00
9	Half Hood.....	14 " "	8	50	10 00
14	Half Hood.....	22 x 30	10	165	20 00
15	Shield.....	22 x 30	10	160	18 00
16	Half Hood.....	16 x 26	10	109	15 00
17	Shield.....	16 x 26	10	105	13 50
18	Half Hood.....	16 x 26	8	80	13 50
19	Shield.....	16 x 26	8	80	12 00
60	Power Blower, 8-in.....				4 00
66	Power Blower, 12-in.....				5 00
70	Power Blower, 18-in.....				7 00

Adjustable Pulleys and Post Bracket Supports

For Single and Double Cut Log Bands, Band Resaws, Etc.

These pulleys are perfectly balanced, turned true and mounted on a heavy iron frame. Wheels are 4 feet in diameter, with 6-inch face and wide flange, and are readily adjusted, either vertically or horizontally, to suit requirements. One or more sets of wheels is desirable in a band saw filing room, being needed with power swage and fitting up bench, if not with sharpener. In a double band mill, by shifting pulleys, our sharpener or power swage can be used on either right or left hand saws.



No. 33 Adjustable Pulleys and Stands for Wide Band Saws. 4 foot pulleys, 400 lbs. per pair \$50. Made any size to order. Floor Space, 48x48 in.; 44 in. high. Code word Advise.

No. 33A Adjustable Pulleys and Stands for Double Cut Band Saws. Per Pair \$50. Code word, Advising. These pulleys are same as illustrated but with no flange.



A full set of sockets, brackets and idle pulleys are desirable for use with band sharpeners, if equipped with double feed device.

No. 34 Post Sockets, each.....\$1 50
No. 35 Post Brackets for use with sharpener, each.....1 00
Idle Pulleys Code word
No. 36 4-foot Pulley, each-\$20 00 Idle
No. 36A 3-foot Pulley, each. 17 50 Idler
No. 36B 2-foot Pulley, each. 15 00 Idling

SPECIAL TYPES OF POST BRACKETS FOR BAND SHARPENERS.

Style 1A Single Post Bracket, each \$3. 40 lbs.

Style 127A Double Bracket, no feed device, each \$4. 60 lbs.

Style 127A Back Pawl Post, each \$6. 80 lbs.

Style 1C Double Cut Band Post Bracket, each \$6. 50 lbs.

Style 1 Back Pawl Post, each \$12. 150 lbs.

Style 1 Back Pawl Post for double cut bands, each \$15. 160 lbs.

For a back pawl and post bracket system of handling band saws to sharpener, one double bracket and four single brackets are desirable; and for R. and L. H. saws, two double brackets and six single brackets, together with the necessary link belt, sprocket wheels, etc.

ADJUSTABLE PULLEYS FOR BAND RESAWS.

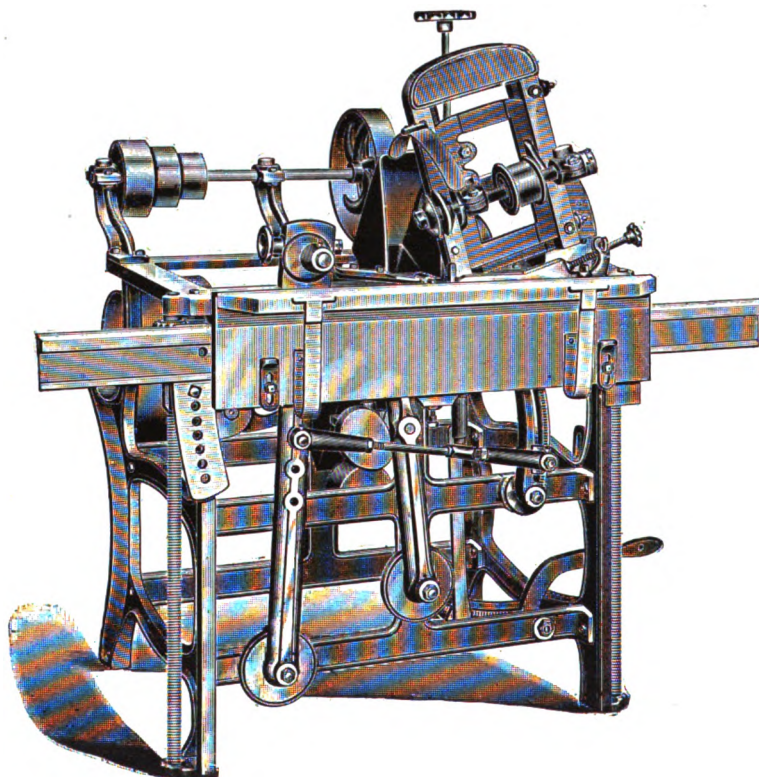
We furnish no stands, but pulleys may be mounted on separate supports or on a small horizontal timber run under the sharpener at suitable height from floor. Our pulleys are low priced and perfectly adapted to their use, and every user of small band saws should have a set.

(For use with sharpener or Filing Vise) Code word
No. 37 24-inch Pulleys, each.....\$15 00 Pull
No. 38 36-inch Pulleys, each.....20 00 Puller
No. 38A 42-inch Pulleys, each.....25 00 Pulling
No. 38B 48-inch Pulleys, each.....30 00 Pulled



A set of three or four brackets and floor rolls for handling a band saw around or above the hammering bench is desirable. There is nothing better for the purpose made than the equipment illustrated. Saw hammering and fitting tools--refer to cut and price list of saw tools.

Wall Brackets with Roll.....\$5 00
Floor Rolls, each.....2 00
Per Set of 3 each.....20 00
Code word, Brackets



No. 170 Covel Automatic Gang Saw Sharpener. \$175.

Code Word, Manifest.

This machine will sharpen all kinds of Gang Saws with any shape or size of saw teeth. Size of emery wheel used 12x15-16 hole, thickness of wheel to suit the gullet. Pulleys on countershaft are 12x2½ inch. Speed about 200 revolutions per minute. Weight, 880 lbs. Floor space, 48x48 inches; height, 58 inches.

Boxed for export f. o. b. cars New York, \$195. Weight, 1,370 lbs. 49 cu. ft.

\$5 extra for emery wheel and belt for this machine.

(Give length of saws between tabs when ordering.)

No. 56—Long Gang Saw Clamp.....	\$50 00
No. 57—Clamp for Saws 5 x 25 inch or smaller.....	20 00
No. 58—Clamp for Saws 6 x 35 inch or smaller.....	25 00

Code Word
Clamped
Iron
Ironed

Swages, Shapers, Stretchers and miscellaneous Gang Saw Tools, any style or size desired, as listed on other pages.

Bolton Automatic Gang Sharpeners

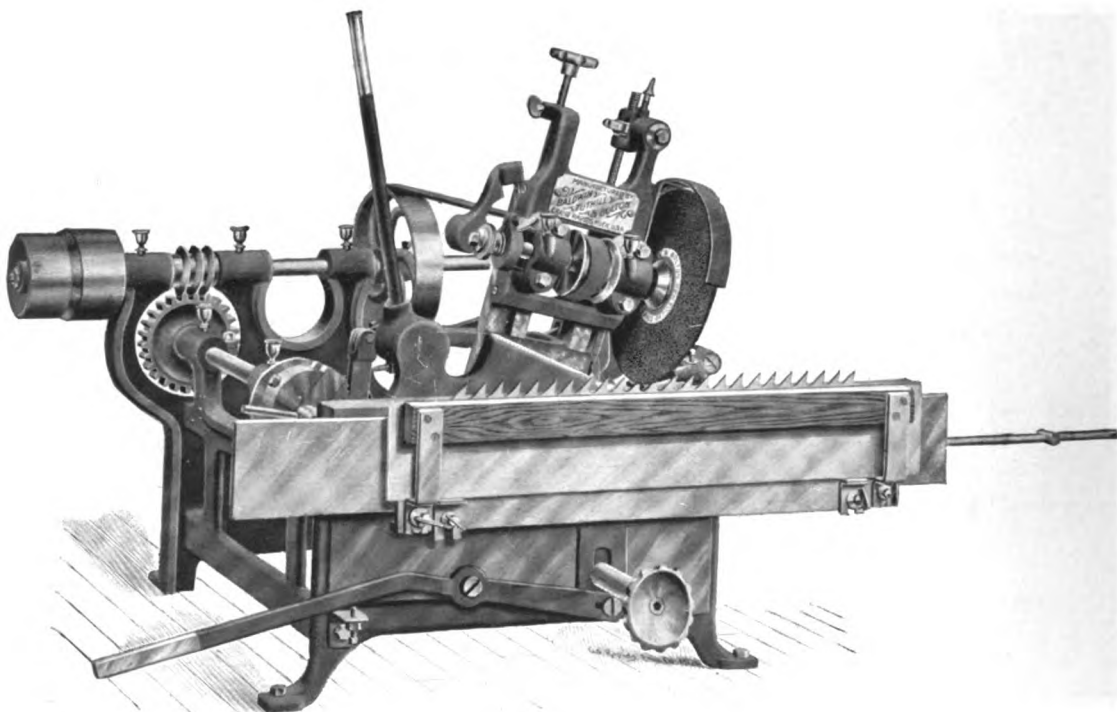
The introduction of small gang mills using saws shorter, narrower and of lighter gauge than those used in log sawing, for the greater economy in the manufacture of lumber, and especially in the manufacture of rift sawed flooring, has created a demand for a moderately priced small gang saw filing room outfit. In deference to this demand, we have produced machines which give uniform satisfaction.

An order for rift gang saw fitting machines should state all dimensions of saws on which the machines are to be used, and, if possible, should be accompanied by one of the saws, which will be returned with the machines adjusted to it.

Our Bolton Gang Saw Sharpeners are built in several sizes, adapted to meet any requirements for small gang saws. We have furnished this machine accompanied by the other necessary machinery and tools, for use on saws 3x13½x22 gauge, 5x18½x17 gauge, 5x24x18 gauge, and 6x34x15 gauge. But we recommend the No. 45 machines for saws over 5x24 inches. The carriage for saw must be built in each case to suit the width and length of saws between tabs. Will furnish machines to meet any requirement.

Two forms control the movement of emery wheel, one giving shape to the tooth, and the other regulating the drop of the wheel down the face of tooth, to prevent case hardening or burning points or root of tooth. Emery wheel has lateral movement by means of knurled nut in head. Machine has slide head adjustment, to give any hook from 0 to 30 degrees, adjustable feed finger, oil cups, full babbitted boxes, guard for wheel, dust collector, reduced loose pulley, and a form for shaping teeth, that will readily produce any shape desired. Machine is readily adjusted for any hook, any spacing, any depth of throat, and shape of throat. The machine will give any spacing one-half inch or longer, and any shape of tooth or throat. All adjustments are simple, readily made and convenient, and nothing is omitted calculated to facilitate work.

DIRECTIONS—Adjust saw so that bottom of throat is just enough higher than top of steel shoe on which the feed finger rides, to let point of feed finger engage with the curved face of tooth. If the saw is set in this manner, the under side of feed finger will ride on the steel shoe and the movement will have no tendency to raise the saw. To change the angle of back of tooth, adjust the sliding form. This sliding form, which gives shape to back of tooth, is reversible, one side making a straight back and the other a round back. Its surface may be readily dressed to any desired shape. If you wish to make a long throat, raise the idler so that feed finger pushes the saw forward before the emery wheel rises. The higher you raise the idler the longer will be the throat. The form mounted on the eccentric should be so adjusted as to just let the emery wheel reach bottom of throat as the saw starts forward. To make a round gullet, adjust the form on eccentric, so that the emery wheel will not reach bottom of throat before the saw starts forward. Give feed finger just enough stroke to accommodate the spacing, and adjust it so as to reach far enough forward to keep the pulley on emery arbor about in the center of the opening in the head. Keep all parts well oiled. The saw may be inserted in carriage by dropping the carriage, using the lever shown in cut, or by lifting the emery wheel head by means of lever at top of machine.



(Sold with unqualified warranty)

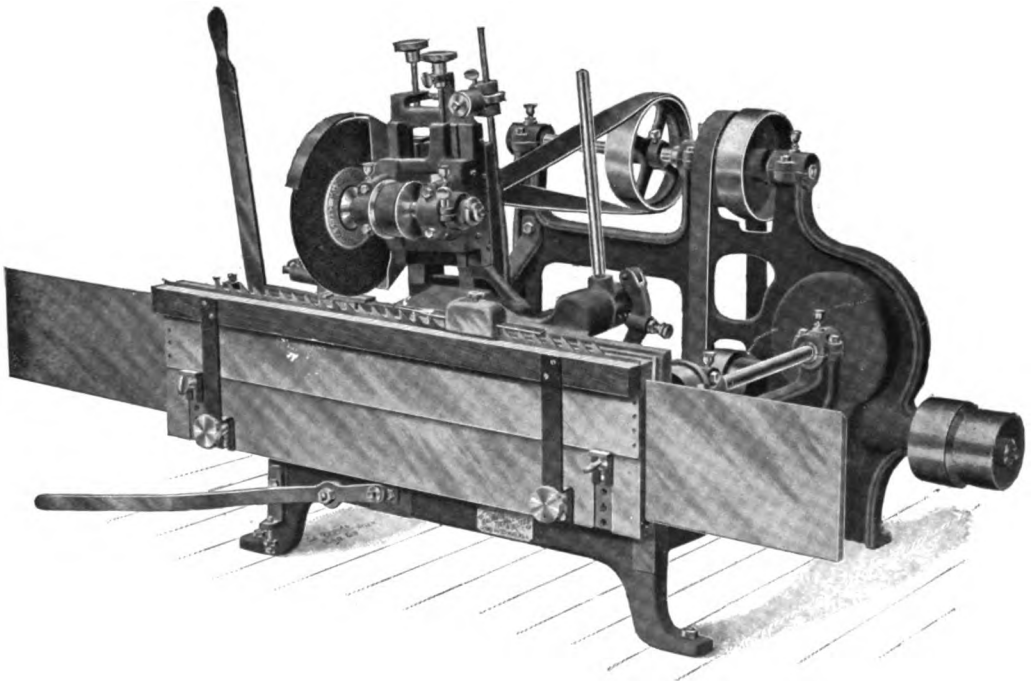
Bolton Automatic Sharpener for Small Gang Saws.

No. 43 Gang Sharpener for Saws 25x5x17 guage or smaller, f. o. b. Grand Rapids..... \$ 90 00
 No. 44 Gang Sharpener for Saws 34x6x15 guage or smaller, f. o. b. Grand Rapids..... 100 00

No.	Approx. Weight	Driving Pulley	Speed	Floor Space	Code word
43	210 lbs.	3½-in.; 1¼-in. Belt	750	26x30-in.; 30-in. high	Rift
44	225 lbs.	3½-in.; 1½-in. Belt	750	26x30-in.; 30-in. high	Riftwise

With order send sample saw or outline, showing style of teeth, tabbing etc.

10 Per Cent. advance for Boxing and delivery f. o. b. cars New York for export



(Sold with unqualified warranty)

No. 45 Bolton Automatic Sharpener for Large Gang Saws.

For saw 48x8 or smaller, f. o. b. Grand Rapids, \$150 00

No.	Approx. Weight	Driving Pulley	Speed	Floor Space	Code Word
45	600 lbs.	5 in. 2 in. Belt	700 30 Teeth	30x36 in. 32 in. high	Rifting

With order send sample saw or outline of saw, showing style of teeth, tabbing, etc.

10 per cent. in price for boxing and delivery f. o. b. cars New York for export

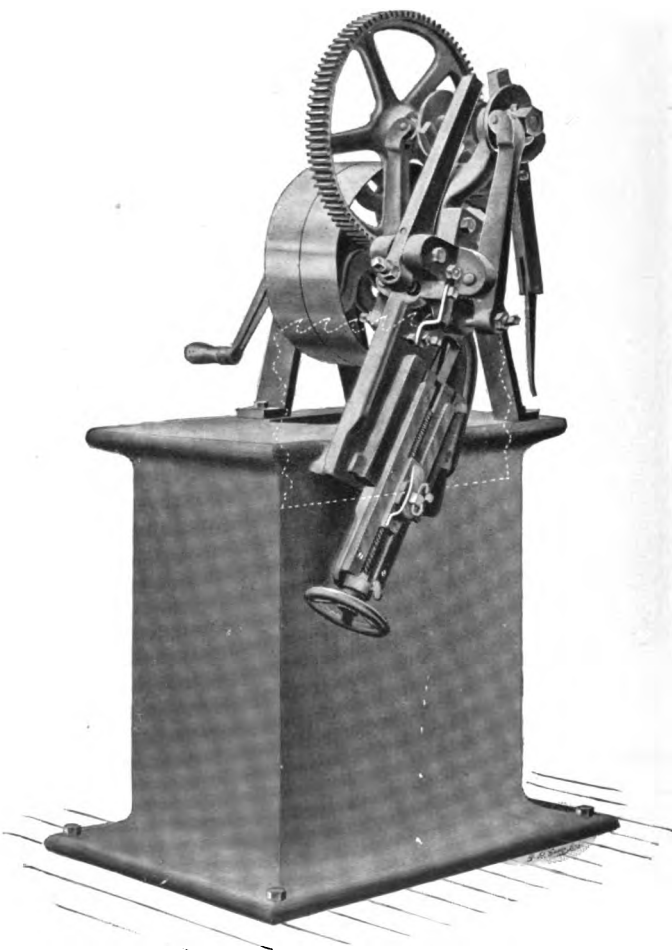


Rhodes Automatic Power Band Saw Swage

The Rhodes Power Band Swage stands the test of time. Many of these machines have been in use for years. Mills using wide band saws can well afford this machine.

Well made of best iron and steel. Rapid—swages from 25 to 30 teeth per minute. Entirely automatic. Direct pressure on top of tooth. No roll to die. Face of tooth left perfectly straight. A perfect machine for preserving hook. Very desirable for extreme hook. Perfect clamping device—clamps catch tooth close to point. Large bearings on sides of tooth to prevent drawing away or buckling. Variable use for saws from 6 to 14 inches wide, 13 to 17 gauge, hard, brittle, or soft. It works with equally good results. Adjustable to any spacing, any hook, any shape of tooth. Fully warranted and subject to trial by responsible people. It makes a strong and lasting tooth. Swaging is made full on face of tooth and corner can be made light or heavy, long or short, and requires no upsetting.

How Used—The saw must rest on pulleys. The swage may be used for either right or left hand saws, or for both, by shifting pulleys. The machine can be adjusted for work in two minutes or less, and requires no more attention than an automatic sharpener. The work cannot be excelled. The swage is made full on face of tooth, the corner light or heavy, as desired, and it is the strongest that can be put on the market.



(Sold with unqualified warranty)

Rhodes Automatic Power Band Saw Swage, No. 10.

(Saw must be supported by adjustable pulleys)

Price, f. o. b. Grand Rapids, \$200 00

Approx. Weight
600

Driving Pulley
3X13 in.
3 in. Belt

Speed
125
25 Teeth

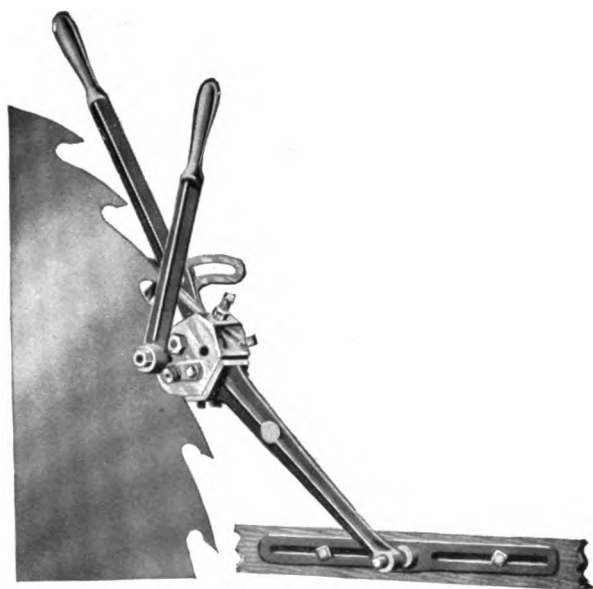
Floor Space
28X32 in.
54 in. high

Code Word
Automatic

10 per cent. advance for boxing and delivery f. o. b. cars New York for export.

The Hanchett Adjustable Saw Swages

FOR BANDS, GANGS, CIRCULARS AND RESAWS.



Style A-5 Hanchett Circular Saw Swage

They are an efficient eccentric die swage, and are noted for their great speed and ease of operation, the excellent work which they do, simplicity of construction, perfect adjustment, and their durability. The swage head is made from a solid block of forged steel, and all wearing parts are carefully hardened. The dies have several wearing places and work in hardened tool steel bearings, which may be duplicated at any time at a trifling expense, thus making them the most durable swage made. All Hanchett swages are made of the best material it is possible to procure. The dies and clamp screws are made of the finest tool steel, the levers and other parts are made of malleable iron

and steel and are nicely polished and nickel plated. They are compact and strong. They will not spring or move ahead on the saw, but will stay right where they are clamped. They are not complicated; while they have all the necessary attachments, they have no unnecessary ones. The slotted adjustment which holds the die and is connected to the die lever is a very handy arrangement. If it is necessary to adjust the die for more or less swaging, it can be done to a hair's breadth with this attachment without changing the position of the lever. The shape of the anvil also makes it very easy to dress, which is a very important part in keeping any swage in perfect working order.

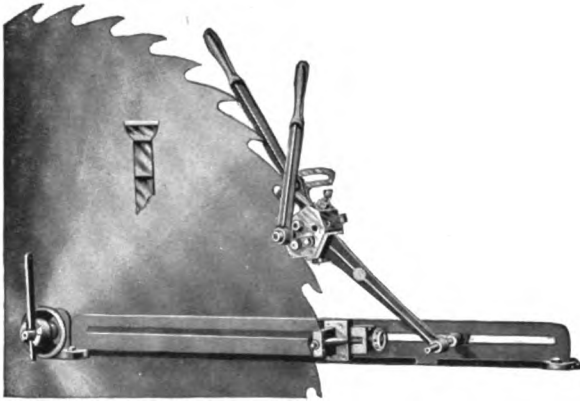
Large Swage, 25 lbs. Box 8x8x27 inch.

Style A-5	Size No. 1 For Saws 5 to 10 Gauge.....	\$35 00
Style A-5	Size No. 0 For Saws 8 to 12 Gauge.....	35 00
Style A-5	Size No. 2 For Saws 11 to 16 Gauge.....	33 00

Code Word
Distill
Distilled
Distillery

Style A4 Hanchett Circular Saw Swage, with Attachments

There has always been a demand for saw-fitting attachments, and to satisfy this demand this swage has been placed upon the market with the following attachments: A long bench casting of malleable iron, which is a very handy device upon which to do fitting of all kinds of circular saws, and a jointer for jointing or rounding the saw.



Style A-4 Hanchett Circular Swage with Bench Attachment and Jointer

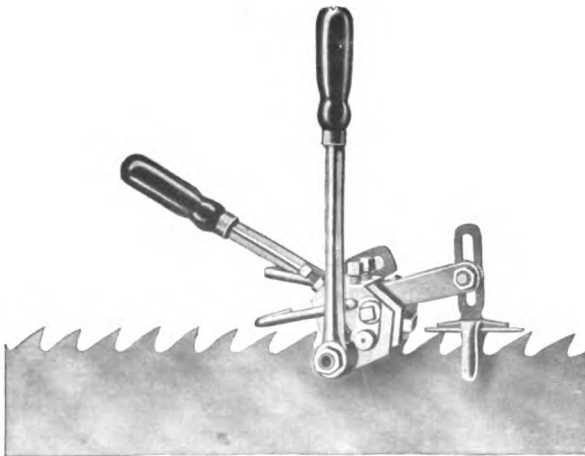
The saw is held on the arbor by a cone, which is accurately turned and holds the saw perfectly central. Cones are furnished that will accommodate arbor holes of any desired size. The swage is held in position relative to the saw by a pin which slides along the slot in the casting. The swage and bench attachment, taken together, make a good combination, and are spoken of as Style A1. When the jointer is connected to the bench attachment and swage, it is designated as "Style A4." We have sold a great many of this style

and they have always given the best of satisfaction. The jointing is done by a piece of the ordinary mill file held firmly in place by a set screw and adjusted by a hand wheel. It is a simple machine, practically impossible to get out of order, and is just what every filer wants to use every day.

Large Swage, 25 lbs. Box, 8x8x27 inches high. Jointer and Bench Attachment, 32 lbs. 4 feet long.
Code Word

Style A-4	Size No. 1	For Saws 5 to 10 Gauge.....	\$42 00	Easier
Style A-4	Size No. 0	For Saws 8 to 12 Gauge.....	42 00	Disease
Style A-4	Size No. 2	For Saws 11 to 16 Gauge.....	38 00	Easily
Style A-4	Size No. 3	For Saws 16 to 18 Gauge.....	35 00	Eased
Style A-4	Size No. 4	For Saws 18 to 26 Gauge.....	35 00	Easement

Hanchett Swages for Bands, Gangs and Band Re-saws



Hanchett Band or Gang Swage

This style is designed especially for use on band, band resaw, and gang saws. When used on gang saws a fork is furnished that has no forward projection, thus making it more convenient for swaging the last teeth at lower end of the saw. The Hanchett Band Swage is the most rapid to operate of any swage on the market.

We wish to call especial attention of factory men, and all users of small resaws, to Nos. 2 and 3, which are especially adapted for saws ranging from 16 to 26 gauge. Filers find the band resaw swage to be much superior to the upset or spring set. It

draws the tooth out widest on the face, widest at extreme points, and makes very strong corners. This swage may be used on teeth one-fourth of an inch or longer. It is adapted to all ordinary shapes of teeth and gives sufficient swage without the use of the upset. The Hanchett Band Swage is noted for its rapidity of operation and the excellent work which it does.

By the action of the dies the teeth are drawn out, which not alone refines the steel, causing the saw to carry a better cutting edge and prevents the splitting and crumbling of teeth, but at the same time increases the life of the saw from 20 to 30 per cent.

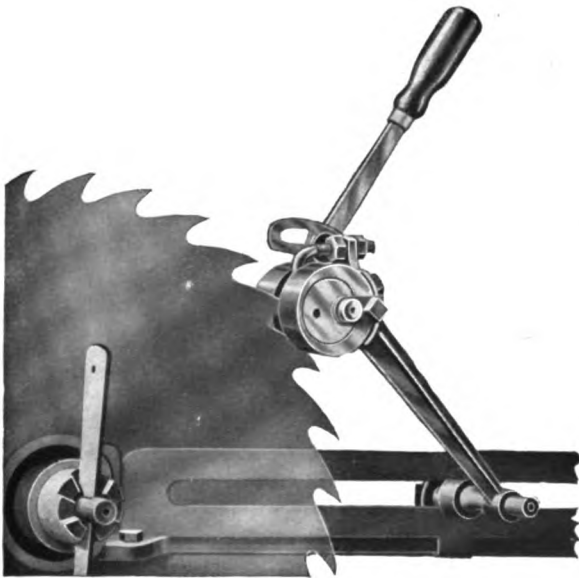
They are very satisfactory and we are always glad to send them out on approval, guaranteed to be entirely satisfactory.

Size No. 0 For Saws 8 to 12 Guage, inclusive.....	\$35 00
Size No. 1 For Saws 11 to 16 Guage.....	33 00
Size No. 2 For Saws 16 to 20 Guage.....	28 00
Size No. 3 For Saws 18 to 26 Guage.....	28 00

Code Word
Obb
Good
Goodly
Goodness

Approximate weight of largest size, boxed, is 15 lbs. Box, 7x7x18.

The Hanchett Circular Swage Shaper



For Log, Shingle and Small Circular Saws

The very successful use of the swage shaper or pressure sidedresser on band, hand resaw and gang saws, has led us to place upon the market a swage shaper designed especially for log, shingle and small circular saws. The Hanchett Swage Shaper completes the work of the saw swage and presses every tooth to a perfect shape—widest at extreme points, widest on the face—thus making a perfect clearance, and every tooth is pressed to the same size and exactly alike, as though pressed into a mould. The dies are accurately ground and beveled in two ways, so as to taper the saw tooth backward from the point and from the face. The dies may be easily removed and reground at any time by

the filer. The slotted circle, with which the dies are attached to the shaping lever, is a very handy arrangement. The operator may adjust the shaping lever to whatever is the most convenient for him without disturbing the position of the dies, or if he wishes to change the spreading of the dies, he may do so to a hair's breadth without disturbing the position of the lever. Another handy arrangement which will appeal to every filer and practical mill man is the method the shaper is used upon the saw, the machine being attached to a pin in the same manner as a circular saw swage. When it is to be used, the saw swage is removed and the swage shaper is placed on the pin in its place.

The shaper makes every tooth exactly alike, hence every tooth must do the same amount of work. This suggests an easy running saw, which will cut smoother and bet-

ter lumber and at the same time requires less power. The swage shaper saves the saw blade, for it presses the steel together, instead of filing it away as by a side file. By the use of the Hanchett Circular Swage Shaper less files, time and labor are required to keep a saw in perfect working order. This gives the saw teeth perfect clearance at all times, even after the teeth have become dull. They are extremely handy and rapid to operate and will dress from 15 to 20 teeth per minute as commonly used by filers.

We guarantee all Hanchett Circular Swage Shapers to be satisfactory. If not found so, they may be returned at our expense.

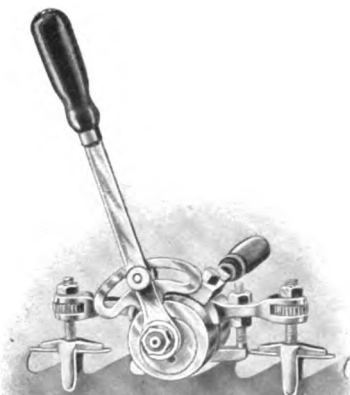
No. 1—For Saws from 5-12 Gauge.....	\$25 00
No. 2—For Saws from 11-18 Gauge.....	20 00
No. 3—For Saws from 16-26 Gauge.....	20 00

Code Word
Emit
Emitted
Emitting

The Hanchett Band Swage Shaper

FOR BAND, BAND RESAW OR GANG SAWS.

CAN YOU AFFORD TO BE WITHOUT THIS TOOL?



Expert saw filers are coming more and more to use the Swage Shaper for side-dressing purposes. This is especially true of band resaws, until now a Swage Shaper is considered indispensable for fitting them. The sidedressing of band, band resaw and gang saws has much to do with the successful cutting of good, straight, smooth lumber. The Hanchett Band Swage Shaper completes work of the Swage and presses every tooth to a perfect shape—widest at extreme points, widest on face—thus making a perfect clearance. This is accomplished by a pair of hardened tool steel dies, one upon each side of the tooth, which presses it to any desired gauge. The dies are accurately ground and beveled in two ways, so as to taper the saw tooth downward from the point and backward from the face. The dies are set in plugs, which are forced together by a screw running through them having a right-hand thread on one end and a left-

hand thread on the other. The dies may be easily removed from the plugs by a punch and reground at any time by the filer.

The arms to which the forks are attached keep the Shaper from tipping upward or backward, while the forks keep the Shaper in line on the saw and are adjusted easily and perfectly by the knurled nuts. The shaping is done by one lever, the other handle being put on merely for convenience in handling while operating. Perhaps the most distinctive feature of the whole tool is the tooth guide or stop. This little device keeps the teeth from striking on the side of the Shaper or the dies as they pass by. It makes the shape of each tooth exactly alike, no matter what the shape of the tooth, irregularity of spacing, pitch, etc. The adjustment is measured from the point of tooth.

The Hanchett Swage Shapers are rapid to operate and will dress from 60 to 75 teeth per minute as commonly used by filers. They are extremely easy to adjust to any shape or pitch of teeth.

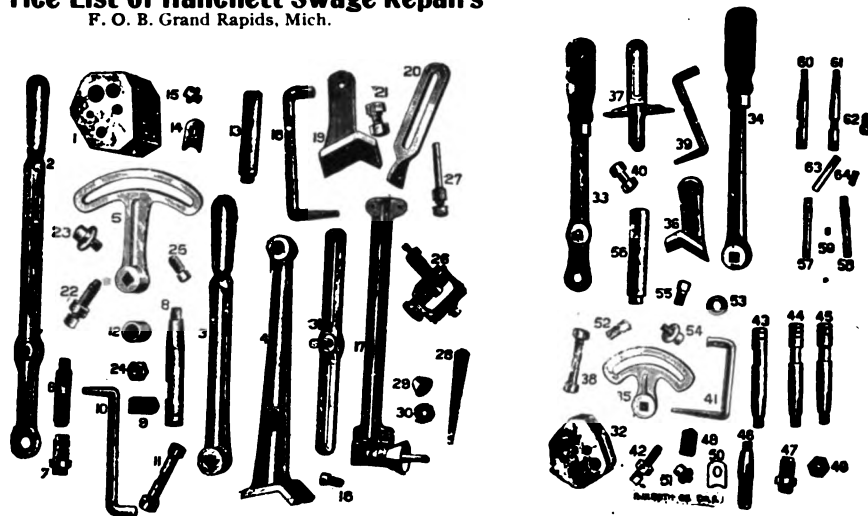
All Hanchett Band Swage Shapers are guaranteed to be entirely satisfactory and to please, if not found so they may be returned at our expense.

No. 1—For Saws from 8-13 Gauge.....	\$25 00
No. 2—For Saws from 12-18 Gauge.....	20 00
No. 3—For Saws from 18-26 Gauge.....	20 00

Code Word
Light
Lighted
Lighting

Net Price List of Hanchett Swage Repairs

F. O. B. Grand Rapids, Mich.



Circular Repairs.

When ordering parts, always give number of part wanted. Also give size of swage, whether No. 1, 2 or 3. Also, to insure against any error, it is well to say what kind of saws Swage is used on—circular, band or gang. When it is desired to have goods sent by mail or prepaid express, cost of same is added to price of goods.

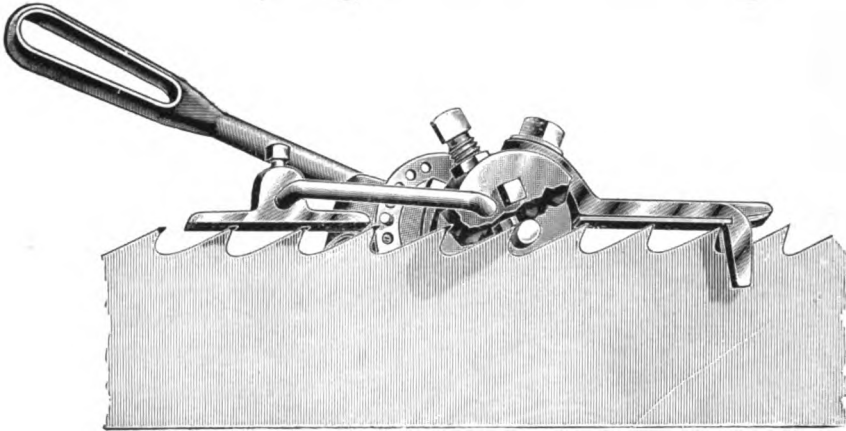
Circular List.

No.	Size No. 1	Size No. 2
1 Head	\$12 00	\$10 00
2 Die Lever	2 00	1 50
3 Clamping Lever	2 00	1 50
4 Bracket	3 00	2 00
5 (Slotted) Die Adjuster	2 00	1 50
6 Lever Clamping Screw	65	50
7 Stationary Clamp Screw and Nut	60	50
8 Eccentric Die	1 25	1 00
9 Anvil	75	50
10 Lever Rest	75	50
11 Eccentric Bolt and Nut	75	50
12 Hardened Steel Die Bearings, per pair	1 25	1 00
13 Punch for removing and inserting Die Bearings	50	40
14 Die Latch	20	20
15 Screws and Washer for Die Latch	20	20
16 Cap Screw for Bracket, each	15	15
17 Bench Casting	3 00	3 00
18 Back Rest for Style A2	75	
19 Bracket for Style A2	1 75	
20 Front Rest for Style A2	75	
21 Bolt and Nut for Front Rest	50	
22 Anvil Adjusting Screw and Nut	50	
23 Bolt and Washer for (Slotted) Die Adjuster	25	25
24 Nut for Die or Clamping Screw	10	10
25 Set Screw for Lever Rest	25	25
26 Jointer	5 00	5 00
27 Bracket Pin and Nut	1 00	1 00
28 Jointer Key	25	25
29 Saw Cone (any size)	1 00	1 00
30 Step Washer	75	75
31 Slotted Bench Casting for Style A5	1 00	75

Band or Gang Repairs.

Band or Gang List.

No.	Size No. 1	Size No. 2, 3
32 Head	\$10 00	\$ 8 00
33 Die Lever	1 50	1 00
34 Clamping Lever	1 50	1 00
35 (Slotted) Die Adjuster	1 50	1 00
36 Bracket	1 50	1 00
37 Fork	1 25	1 00
38 Eccentric Bolt and Nut	40	
39 Lever Rest	50	40
40 Fork, Bolt and Nut	40	30
41 Back Rest	50	40
42 Anvil Adjusting Screw and Nut	40	30
43 $\frac{5}{8}$ inch Eccentric Die	1 00	
44 $\frac{5}{8}$ in. (9-16 in. Eccentric) Die	1 00	
45 $\frac{5}{8}$ in. ($\frac{1}{2}$ in. Eccentric) Die	1 00	
46 Lever Clamping Screw	50	40
47 Stationary Clamping Screw		
48 Anvil	50	40
49 Nut for Eccentric Die or Clamping Screw	10	10
50 Latch for Eccentric Die	20	15
51 Screw and Washer for Latch	20	15
52 Set Screw for Holding Back Rest or Lever Rest	25	20
53 Hardened Steel Die Bearings, per pair	1 00	75
54 Bolt and Washer for Adjusting Circle	25	20
55 Screw for Bracket, each	15	10
56 Punch for removing and inserting Bushings	40	30
57 5-16 inch Eccentric Die for No. 3 Swage		75
58 $\frac{1}{4}$ inch Eccentric Die for No. 3 Swage		75
59 Set Screws for holding Levers to place		10
60 7-16 inch Eccentric Die for No. 2 Swage		75
61 $\frac{3}{4}$ inch Eccentric Die for No. 2 Swage		75
62 Set Screw for holding Anvil Bar in No. 2 Swage		15
63 Bar for holding Anvil in No. 2 and 3 Swage		20
64 Set Screw for holding Anvil Bar in No. 3 Swage		10

Crowell Band, Gang, Circular and Resaw Swages**Crowell Band Swage (showing position of tooth.)**

Finely constructed and easily adjusted. Made in sizes to fit any thickness of Saw Plate; works equally well on Band or Circular Saws; spreads and swages the teeth with the least possible waste, and does perfect work without front guard or back-stop, although these are convenient and always supplied.

These Swages are made of the finest material obtainable, and are giving satisfaction in many manufacturing plants, both at home and abroad.

THE DIFFERENT SIZES ARE AS FOLLOWS:

No. 0—Is the same as No. 1, only it has 5-16 Die for shallow teeth; it is generally used on 20 to 22 gauge saws, \$20.00. Weight, $2\frac{3}{4}$ lbs. Die is 5-16 inch, with oval end.

No. 1—Is suitable for all saws from 16 to 22 gauge, and will fit teeth one inch or further apart. \$20. Weight, $2\frac{3}{4}$ lbs. Die is $\frac{3}{8}$ inch, with oval end.

No. 2—Is suitable for all saws from 12 to 16 gauge, and will fit teeth one and a quarter inches or further apart. \$25. Weight, 7 lbs.

No. 3—Is suitable for all saws from 9 to 12 gauge, and will fit teeth one and one-quarter inches or further apart. \$28. Weight, 10 lbs.

No. 4—Is suitable for all saws from 6 to 12 gauge. \$30. Weight, 12 lbs.

There are hundreds of the SWAGES in use in Saw and Planing Mills, Sash, Door, Wheel and Furniture Factories, Pattern Shops, Novelty Works. Stave and Heading Mills, Box Factories, Car Shops, Locomotive and Veneer Works. Piano and Organ Factories.

ORDERS.

ALL ORDERS FROM PARTIES not accustomed to the use of SWAGES should be accompanied by sketch of at least four teeth for Band or Gang Saws, and three teeth for Circular Saws; also gauge of saw.

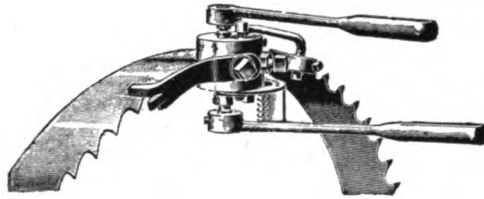
This will enable us to adjust Swage exactly before shipping.

A set of directions is attached to each Swage.

CROWELL SWAGE REPAIRS.

	Resaw	Band	Circ'lar
Dies, each	\$ 85	\$1 15	\$1 50
Anvils	30	40	50
Block or Body.....	5 00	7 00	9 00
Clamp Screw, Stationary.....	50	75	1 00
Clamp Screw for Handle.....	75	1 00	1 25
Handles, each	75	1 00	1 50
Back Stop and Spring Pin.....	2 00	3 00	4 00
Plate for same.....	50	75	1 00
Front Guard for Band Saw.....	1 50	1 75	2 00
Front Guard for Circular.....	1 50	1 75	2 50
Back Rest, with Screws complete.....	75	1 00	1 25
Set Collar and Screw for Die.....	75	85	1 00
Holder for Set Collar.....	25	50	75
Anvil Screw and Lock Nut.....	25	50	75
Screws for Front Guard and Backstop..	50	75	1 00

The Crowell Cylinder Saw Swage Fills a Long Felt want.



For Cylinder or Stave Saws.

No. 1. Cylinder Swage is suitable for all Saws from 16 to 20 gauge, 2¼ lbs.....	\$23 00
No. 2. Cylinder Swage is suitable for all Saws from 12 to 16 gauge, 2½ lbs.....	28 00

A stave saw swaged with this tool cuts clean and easy and does not scrape. Every manufacturer will do well to adopt this swage without delay, for cylinder saws can be swaged with it just as successfully as bands or circulars.

ORDERS.

All orders for cylinder swages ought to be accompanied by sketch of 4 teeth, with diameter and gauge of saw given, so that we may be sure to send right size, with guides properly shaped to suit the circle of the saws in use.

We shall take great pleasure in furnishing, upon application, any detailed information our customers may desire.

TESTIMONIAL LETTERS.

L. L. SOMERS, BELLE, CLAY CO., MISS. Replying to your esteemed favor of the 13th, wish to say that I now have the two anvils referred to in your letter. In referring to the swages, wish to say that they are giving entire satisfaction in every respect. The stave saw swage is all that you claim for it, and much more might be said of its merits.

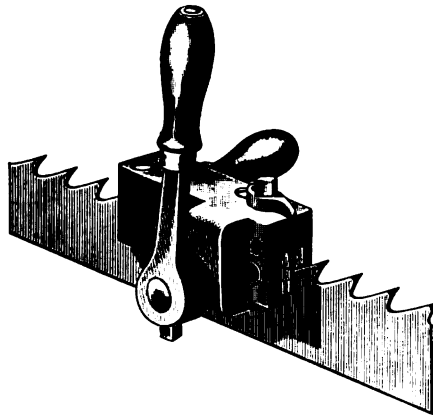
The greatest advantage I see is the keeping of the teeth drawn to a uniform length, and the lessened danger of jerking out the teeth while the saw is in use. It requires some time and patience on the part of the operator, but once accustomed to the use of the swage, he would be more than repaid for the trouble in learning the adjustment of the tool.

I will at any time take pleasure in recommending the use of this swage to any millman you might desire to refer to me.

BUFFALO RIVER STAVE CO., ST. JOE, ARK. We are in receipt of your favor of the 7th inst., and in reply thereto, beg to advise that after using your Cylinder Saw Swage for about six months we can find no fault with it. It does its work well and quickly, and our foreman thinks that he could not get along without it.

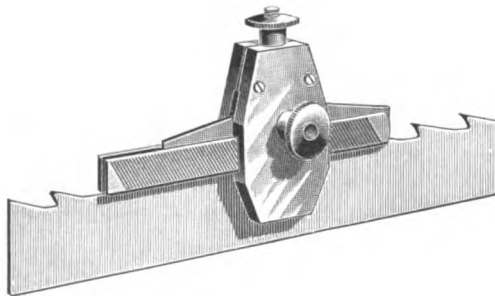
This man had had no experience as a stave saw filer, but with the assistance of your swage he learned in less than two weeks to keep a stave saw in excellent shape.

We think your swage would be a good investment for any stave company at more than double the price.



No. 417. Crowell Band Swage Shaper. \$15. 5 Lbs. Code Word, Crow.

This Shaper differs in design from the others, is simple, handily operated, and makes a uniform point to saw teeth. The dies press both sides of tooth at once. All up-to-date filers recognize the advantages derived from the use of a swage shaper.



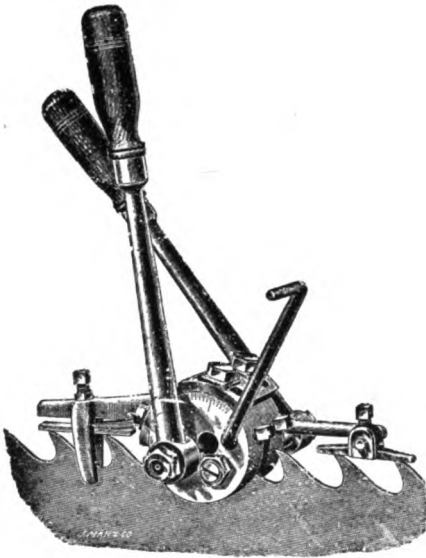
Crowell Double File Band Saw Side Dresser.

No. 418 for Band Resaws, 3 lbs.....	\$15 00
No. 419 for Log Band or Gang Saws, 5 lbs.....	20 00

Our Double File Side Dresser, as shown in the cut, dresses the teeth to any gauge, making them all alike.

It makes the saws cut much smoother and easier. Saws will run with less set and will not get dull so soon. It will side dress a band saw in five minutes.

The White Patent Swage for Bands, Gangs, Circulars and Resaws

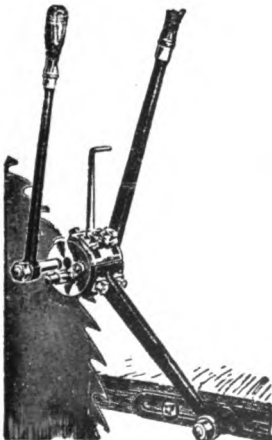


No. 183 White Log Band Swage, 13 lbs. \$35.

This machine is our standard swage for band saws of ordinary width and thickness. The block is 3 inches in diameter, the die and clamp screw each $\frac{3}{8}$ of an inch in diameter, and the lever operating the die and clamp screw are 12 inches long.

No. 185. White Band Resaw Swage, 9 lbs. \$30.

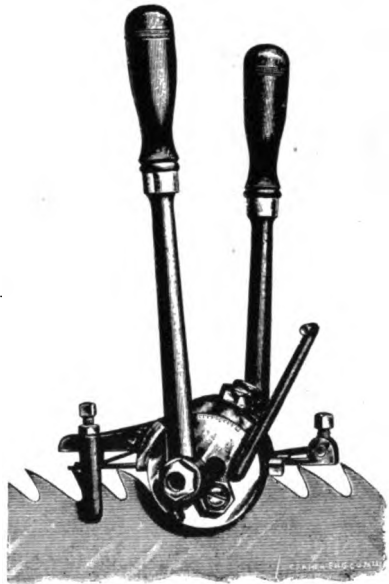
This swage possesses all of the movements and advantages of our large band saw machine, but is only about three-fourths the size, the block being $2\frac{1}{2}$ inches in diameter, the clamp screw and die each 7-16 inch in diameter, and the levers $8\frac{1}{2}$ inches long. This machine is especially adapted for use on band resaws and thin gang saws and will swage any thickness from 15 to 24 gauge.



No. 186 White Heavy Circular Saw Swage, 26 lbs., \$35.

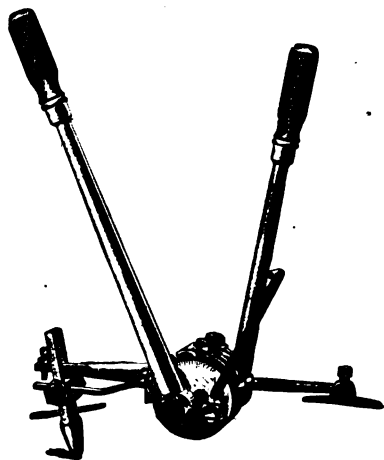
We here illustrate our improved swage for large thick circular saws, from 4 to 10 gauge. This machine is improved with a bracket arm for fastening to the saw bench, as shown in cut, and the saw is revolved on an arbor while being swaged, the arbor closely fitting the eye of the saw in order to secure uniform work. This machine is very strong, the block being $3\frac{1}{2}$ inches in diameter, the die $\frac{3}{8}$ inch in diameter.

and the handle operating the die two feet long.



No. 184. White Gang Swage, 13 lbs.. \$35.

This swage is especially adapted for gang saws; the brackets on each side of the block being very short so that the machine can be worked the full length of the saw and not interfere with the tabs. The block is 3 inches in diameter, die $\frac{5}{8}$ inch in diameter, and handles 12 inches long, so that practically it is the same size as our standard band saw swage, but the arrangements of dies being somewhat different it is particularly suited for gang saw use.



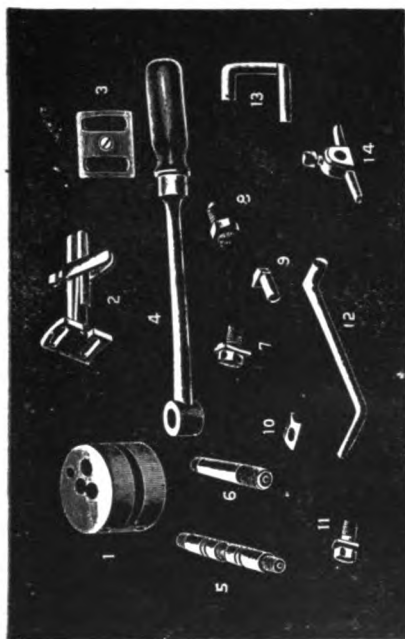
No. 187, White Thin Circular Saw Swage, 14 lbs., \$35.

Illustrated herewith is our swage for thin circular saws, the machine being provided with brackets which can be adjusted to fit the pitch of any saw and will swage nicely saws of ten gauge or thinner. The die is $\frac{5}{8}$ inch in diameter, and block 3 inches in diameter. Unlike our large machine for heavy circular saws this swage is not attached to the saw bench.

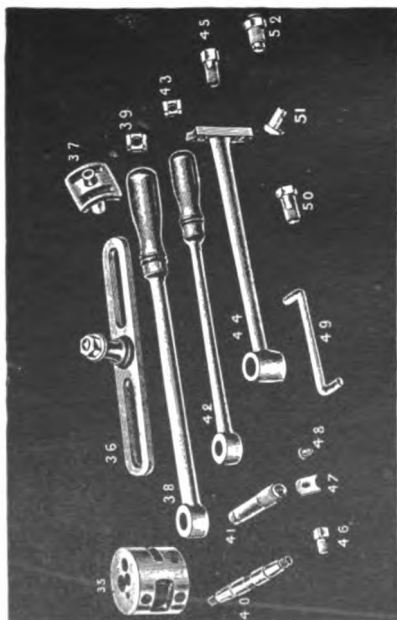
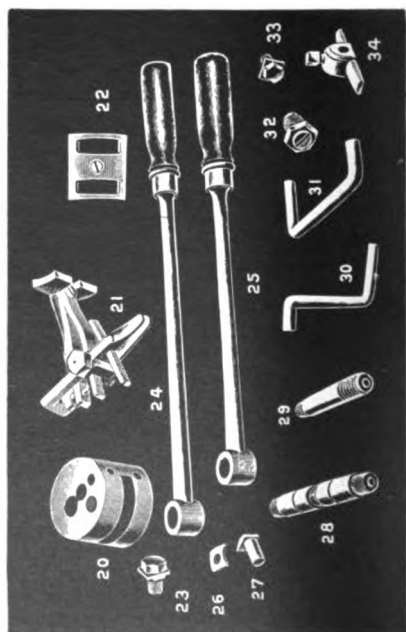
White Saw Swage Repairs

F. O. B. Grand Rapids, prepayment by registered mail or express extra

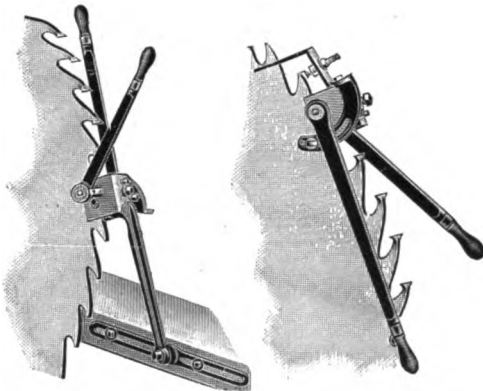
Caution—When ordering White Swage Repairs be sure to mention the style of swage, the number of the part as per illustrated plate of parts and if an anvil is wanted give number on side of same.

**Parts of White Band Gang and Resaw Swages****Price List of Parts**

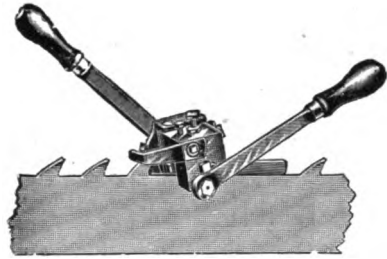
For Bands and Gangs		For Band Resaws		For Thin Circular Saws		For Large Rotary Saws	
No.	PRICE	No.	PRICE	No.	PRICE	No.	PRICE
1	\$12 00	1	\$10 00	20	\$12 00	35	\$12 00
2	3 75	2	3 25	21	5 00	36	2 00
3	3 50	3	3 00	22	3 50	37	3 50
4	1 75	4	1 50	23	75	38	2 25
5	2 00	5	1 50	24	2 00	39	35
6	1 25	6	1 00	25	1 75	40	3 00
7	75	7	65	26	30	41	1 50
8	85	8	75	27	1 25	42	1 75
9	1 25	9	1 00	28	2 00	43	35
10	30	10	25	29	1 25	44	3 00
11	55	11	45	30	1 25	45	50
12	1 25	12	1 00	31	1 00	46	10
13	1 00	13	85	32	85	47	30
14	1 10	14	95	33	55	48	05
				34	1 10	49	1 25
						50	25
						51	1 50
						52	85

**Parts of White Thin Circular Saw Swage****Parts of White Large Rotary Swage**

Crescent Adjustable Saw Swage for Large and Small Circulars, Bands, Gangs and Band Resaws.



No. 166 Crescent Large Circular Swage.....\$28 00
 Net 12 lbs. Boxed 20 lbs. 28x7x7 inch.
 No. 165A Crescent Light Circular Swage.....\$28 00



No. 164 Crescent Band Swage.....\$28 00
 No. 165 Crescent Gang Swage..... 28 00
 Net weight, 5 lbs. Boxed, 12 lbs. 14 x 6 x 5 in.
 No. 164A Crescent Band Resaw Swage....\$28 00
 Net 3 lbs. Boxed 5 lbs.
 No. 164B Crescent Thin Band Resaw Swage 28 00
 Net 2 lbs. Boxed 5 lbs.

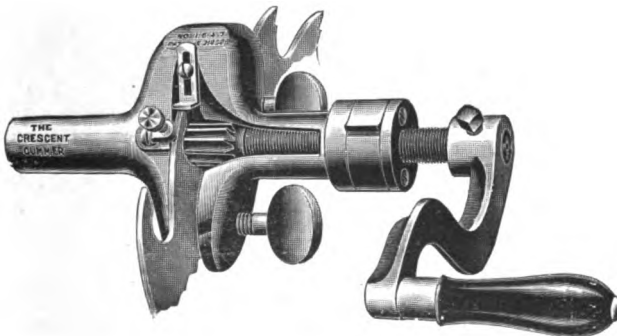
The Crescent Swages are made strong and durable, with a die that rolls out the steel in process of swaging, and makes a strong corner, the metal being spread out down the face of the tooth far enough to give the corner a good strong support, well adapted to stand in knotty or frozen timber. A distinctive feature of this swage is the roller die, which consists of a small roller seated in a mandrel that corresponds to the ordinary eccentric die. This small roller is carried around in the larger shaft in a circular movement, and as it passes the anvil it rolls out the point of tooth, spreading the steel with ease.

The large sized Circular Swage is adapted to saws from 6 to 12 gauge, the small Circular Swage to saws thinner than 12 gauge, the log band or gang sizes to ordinary requirements, and the Band Resaw Swage is made in two sizes, one for saws 18 to 20 gauge and the other for very thin saws or fine teeth.

The Circular Swage may be used either with or without bench attachment, as illustrated by cut.

The anvil dies are adjustable up and down and forward and backward, adapting them to a wide range in requirements.

Crescent Circular Saw Gummer.

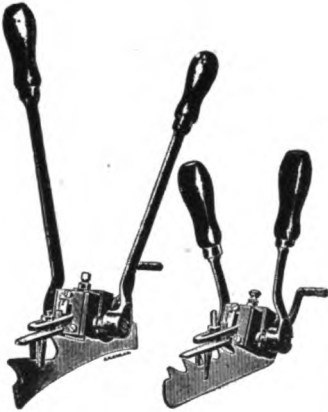


No. 271 Crescent Saw Gummer. \$20.

Is one of the most satisfactory machines for the purpose on the market. Most saw gummers are too heavy and take too much time and work to move from tooth to tooth to make them really desirable for the purpose. The "Crescent" saw gummer is very simple and easily and quickly adjusted.

The chances are that you have been gumming with an emery wheel, which, if improperly handled, may take the tension out of the saw, heat, case-harden, rim-bind and spring the saw, or you have one of the old-style

hand gummers, using short cutters that wear out in going around the saw once. It is a sure thing that you can gum your saw scores of times with the "Crescent" gummer before the reamers become dull. These reamers can be re-ground and made as good as new.



No. 130 Weston Pressure Side Dresser for Band and Gang Saws, **\$25.00**

Weight boxed, 6 lbs.
Code word, Weston.

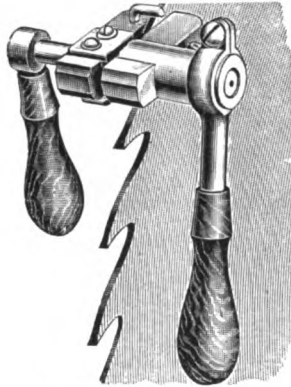
No. 130-A for Band Resaws, **\$15.00**



No. 180 Parke Heavy Circular Swage, **\$25.00**

No. 181 Parke Light Circular Swage, **\$25.00**

No. 182 Parke Band Swage, **\$25.00**



No. 230 for Circular Saws, **\$25.**
Code Word, Circle, 7 lbs

less power and less kerf.

Both sides are compressed at once at a speed of from 20 to 40 teeth per minute.

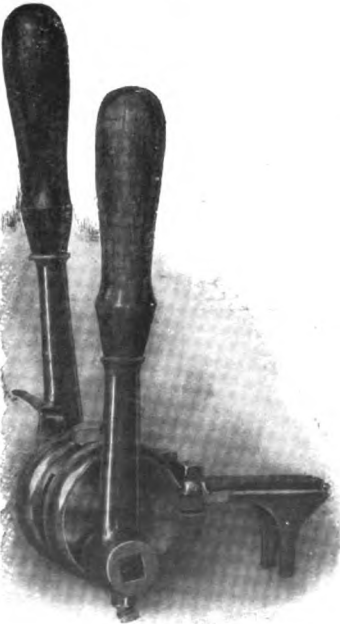
No. 230 for saws 5 to 12 gauge; No. 130 for saws 12 to 18 gauge; No. 130A for saws 18 gauge or thinner. The gauge is adjustable to regulate the kerf by moving the gauge up or down. Do not swage too far down on tooth. For circulars, stand in front of saw, push on left hand lever as you pull on right hand lever. The lever is adjustable on the big nut for different gauges of saws. The nut should be kept clean and well oiled. The result in using the Side Dress on solid Tooth Edger Saws is equal to any inserted tooth saw and much cheaper.

It relieves the tooth on the back. It leaves the tooth the widest at the point and cutting side after any kind of a swage.

It wastes no stock and makes a strong corner.

Saws will not want to be swaged so often, and is adjusted to any gauge of saw with little trouble.

Saw side pointed by this tool will carry more feed, run longer with



No. 28A. B T & B. Band Shaper. Instantly adjustable to any hook **\$20.** Code word, Hook. Weight, boxed, 6 lbs.

For log bands or gangs. By slacking one set screw the body of shaper may be rolled to suit any hook.



All the adjusting that is necessary for the filer to do when he receives swage is to adjust for the proper hook in tooth of saw.

For Band Saws

The block is $2\frac{1}{2}$ in. diameter and 2 in. block. Die is $\frac{1}{2}$ in. diameter.

For Circular Saws

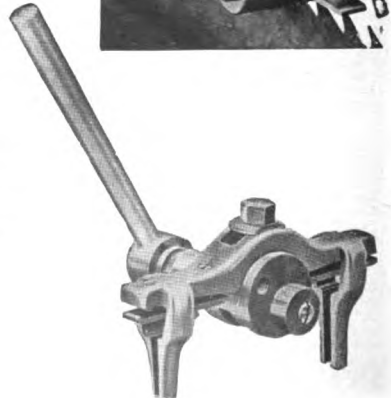
The block is $3\frac{3}{8}$ in. diameter and $2\frac{1}{2}$ in. thick. Die $\frac{3}{4}$ in. diameter.

LOCKWOOD SWAGE PRICE LIST

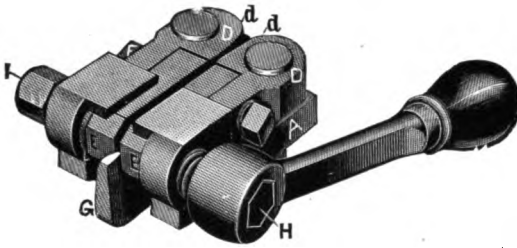
		Code Word
No. 410 Band	\$35 00	Lock
No. 411 Gang	35 00	Locking
No. 412 Circular	35 00	Locked

Bolton Shaper No. 28, sizes for log bands, gangs and resaws.

Price **\$20** Code word, Necessity. Weight, boxed, 5 lbs.

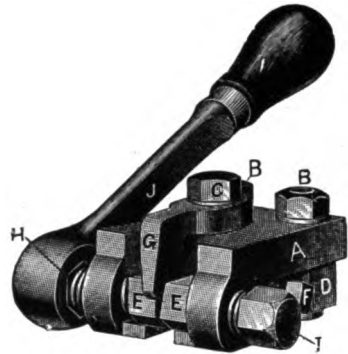


Pribnow Swage Shaper.



Each size, Price \$25 00
 No. 129 For Log Bands
 No. 129A For Log Gangs
 No. 126B For Log Circulars
 No. 129C For Resaws

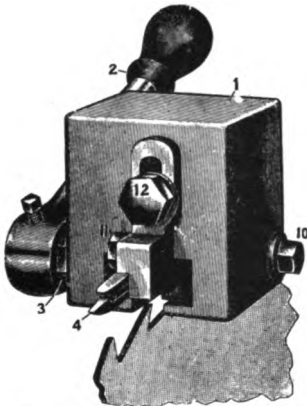
Code Word
 Necessitate
 Necessit
 Necesse
 Nec



Weight, boxed, 6 lbs.

Circular Saw Swage Shapers or Pressure Side Dressers.

In sizes for saws 12 to 72 inches, 5 to 20 gauge.



No. 129B—Pribnow Circular Shaper,
 \$25 00.

The extensive introduction and very successful use of Swage Shapers or Pressure Side Dresser for the side dressing of Bands, Gangs and Band Resaws has suggested to us the advantage of the use of similar tools for side dressing circular saws of all sizes. By Circular Shaper, the tooth when swaged, may be



No. 68—Bolton Circular Swage Shaper for saws 13 to 20 gauge, \$15 00. Code word, Bolt.
 Weight, boxed, 6 lbs.

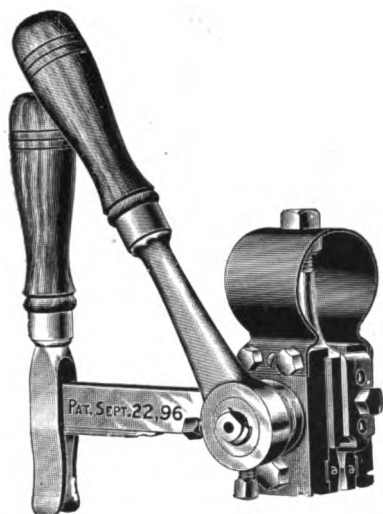
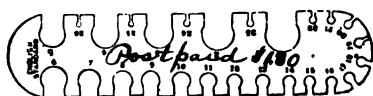
compressed as in a mould to any desired set or spread of the swaging, necessary for perfect clearance. Both sides are compressed at once at a speed of from 10 to 20 teeth per minute. Every tooth is beveled alike, and the results are the most perfect that can be accomplished.

Perfect swaging and side dressing suggest a minimum kerf, smooth lumber and a reduction in power. A tool of this kind for circular saws will be considered both desirable and necessary by all practical men interested in securing the best results in the operation of their circular saws whether for lumber manufacture or woodworking.

A Circular Shaper when used on a shingle saw will beat any spring set on the market. Swage often and keep a cutting corner by using shaper.

You can run your swage longer and cut smoother and more even lumber by using this tool. It is a distinct advantage in always keeping the teeth in line, as the jaw cramps the whole tooth and there is no tendency to bend the teeth over or out of line.

Orders must be accompanied by a templet, or impression on paper showing the shape of the teeth on the different saw to be side dressed, and must also give the diameter and gauge of the saws and the gauge of the swaging commonly run, to enable us to adapt the tools to the different requirements.

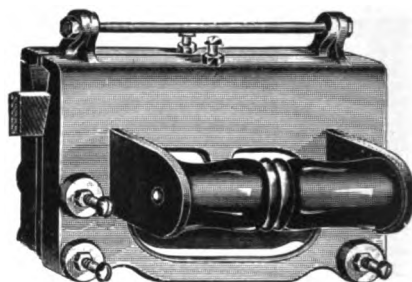


No. 230A Brown Patent Swage Shaper for Band and Gang Saws, \$25 00.

Code word, Show. It is provided with an upright handle, which is now made so it can be set in any angle to suit the operator so that the left hand, which holds and moves the tool, does not interfere with the lever handle. When in operation it can be worked very rapidly either from or towards the operator. The die blocks are interchangeable, which gives four wearing surfaces. In ordering, always state gauge of saw, it is to work on.

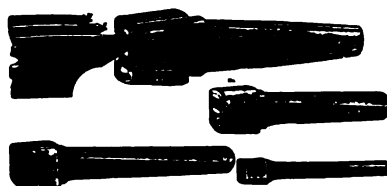


Turner Torch, \$5 00.



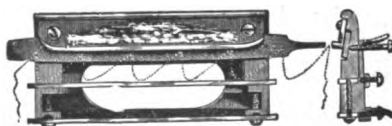
No. 30 Bolton Gang and Band Saw Sidedresser.

Bevels both sides at once to any gauge. Guides from top of tooth. Use common files. Expressed on receipt of price, \$4 00. Code word, Dress.



Emery Wheel Dresser.

Will true Emery Wheel while running at full speed. Price with cutters, \$2 00, postpaid \$2 15. Price of extra cutters per set, 25c, postpaid 28c.



No. 228 Side File for Large Band Saws, \$2 50.

Code word, Sketch. This cut illustrated a new Side File. The Gauge is guided from the top of the tooth. The file can be adjusted to give any shaped tooth. The front view and the end view will give an understanding of this useful tool.



Top Jointer, \$3 00. Postpaid, \$3 25

Miscellaneous Repairs.

Our swages and shapers are built as well as iron and steel can make them, and with proper care will last for years. The work to which they are subjected is very severe and the machines must be kept in good order to do good work. It will pay to have the machine refitted if it is out of order. Postage or prepaid express charged at cost.

Repairs for Bolton Swages.

Eccentric Swaging Die.....	\$ 1 00
Anvil	25
Guides or Rests on Saw.....	50
Stationary Clamp	50
Moving Clamp	1 00
Die Sleeve or Holder.....	1 00

Repairs for Bolton Shapers.

Guides or Rests on Saw.....	\$ 50
Set of Pressure Dies.....	1 00
Pressure Screw	1 00
Tooth Stop	50

REPAIRS FOR RHODES SWAGES.

Number of swage is stamped on top of face plate. Also name the kind of swage, as upper circular, under circular, gang, power band, automatic hand band, etc.

NOTE.—If swage requires a new face or bed plate or a new anvil stock, or has been injured by fire or extensive use, so that it requires rebuilding, it must be shipped to us and will be refitted and made practically as good as new. The price for this work will be the regular price for all new parts put in, and a job work price of fifty cents per hour for the time expended in refitting the machine. Swages sold since 1890 are numbered and templet preserved, so that with number given we can furnish duplicate working parts promptly. For the several hundred Rhodes Swages sold prior to 1890 we have no templet, but can furnish parts that will fit if customer sends templet of die, anvil and clamps.

Die Sleeve or Holder.....	1 00
Swaging Dies, each.....	\$4 00
Swaging Die Pins (through swaging die).....	1 00
Anvil	2 50
Anvil Stock without Anvil.....	4 00
Eccentric (for exerting power on die)	3 00
Eccentric Block (in which eccentric works)	1 00
Clamps, per pair.....	3 00
Clamping Screw	2 50
Spring for moving Clamp.....	25
Rear Spring.....	1 00
Tooth Stop.....	1 00
Steel Bolts (to bolt swage together), each	1 00
Steel Yoke for Under Swage.....	4 00
Guide for Gang Swage.....	1 00

Set of Blocks and Hanging Irons for saws	\$3 50
Face Plate or Bed Plate.....	10 00
Job Work—refitting swages, per hour	50
Postage or Prepaid Express charged at cost.	

Repairs for Bolton Shapers.

Guides or Rests on Saw.....	50
Set of Pressure Dies.....	1 00
Pressure Screw	1 00
Tooth Stop	50

Repairs for Bolton Swages.

Eccentric Swaging Die.....	1 00
Anvil	25
Guides or Rests on Saw.....	50
Stationary Clamp	50
Moving Clamp.....	1 00

Bolton Sharpener Repairs.

	No. 1 or 27	No. 2	No. 3
Slide Head complete	\$35 00	\$30 00	\$25 00
Pawl Slide.....	15 00	10 00	5 00
Feed Finger.....	2 50	2 00	1 50
Worm and Gear.....	10 00	7 50	5 00
Iron Tooth Form.....	75	50	50
Universal Form	2 50	2 50	
Idler and Pin for Form.....	1 50	1 00	1 00
Rotating Form	5 00	5 00	5 00
Blower	5 00	4 00	3 00
Back Pawl	15 00 or 10 00	4 00	4 00

Bolton Stretcher Repairs.

Set Rolls, No. 5 or 6 stretcher..	25 00
Cutters for shearing extra.....	10 00
Set Rolls, No. 8.....	20 00
If furnished with Cutters, extra	10 00
Set Rolls, No. 8B.....	15 00
Set Rolls and Cutters, No. 8C..	25 00
Set Rolls, 9B or 9C.....	17 50
Set Rolls, No. 9 or 9A.....	15 00
Lap Cutters, each.....	1 50
Patch Cutters, each.....	2 50
Set No. 15 Shear Blades.....	7 50
No. 16 Retooler Dies, set.....	10 00
No. 17 Shearing Dies, set.....	10 00

Bolton Band Filer Repairs.

Slide	\$ 3 00
Pawl	1 50

Special Files, No. 110 Sidefile, each	15
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Pribnow Swage Shaper Repairs.

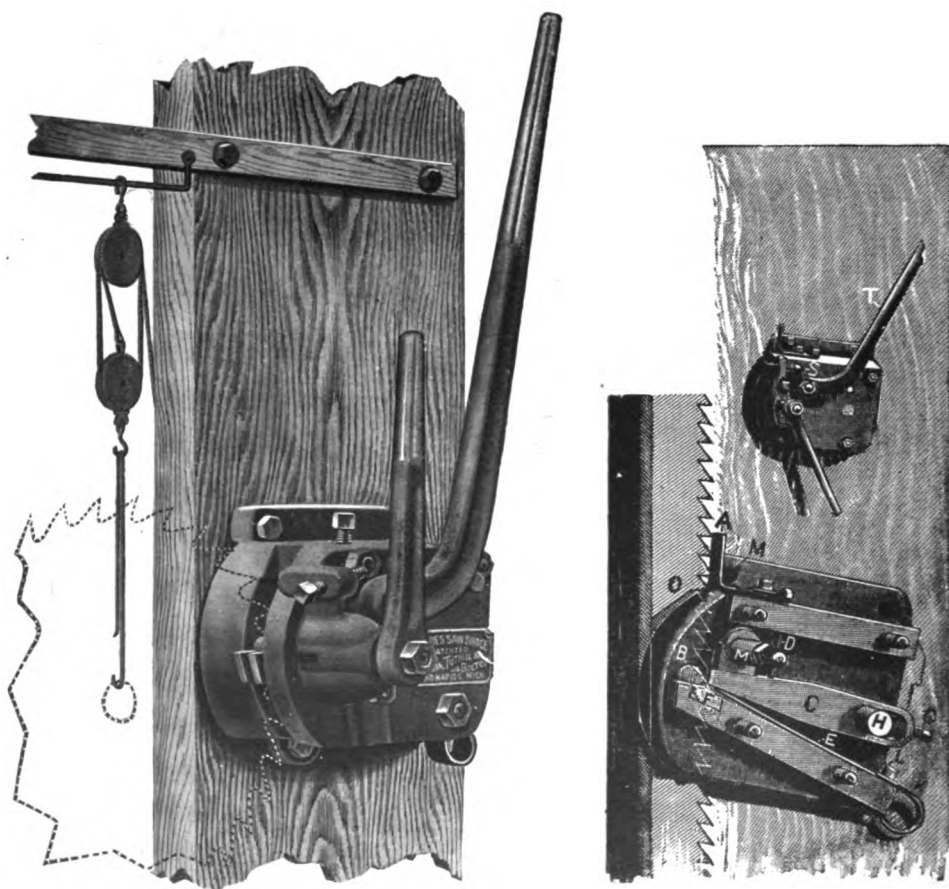
A—Base Plate	\$ 10 00
BB—Swivel Bolts and Nuts, each	50
C—Tooth Gauge Bolt.....	10
DD—Swivels, each	75
EE—Jaws, each	1 50
FF—Set Screws for Jaws, each	10
G—Tooth Gauge	1 50
H—Clamping Screw	75
I—Adjusting Screw for Jaws...	75
J—Handle	1 00
KL—Grinding Gauge, complete	1 50
Headless Set Screws, each.....	05

Bolton Band Setter Repairs.

Pawl Lever, each.....	\$ 1 50
Setting Lever, each.....	1 50
Pawl, each	1 50
Setter, each	1 50
Emery Dresser Cutters, set.....	25

All Cut Gears for Stretchers.

Pair Drive Gears, Nos. 5, 6, or 8	\$ 20 00
Pair Drive Gears, No. 8B or 9..	15 00
Pair Shaft Gears, Nos. 5, 6, 7 or 8	10 00

Rhodes Upper Circular or Gang Saw Swage.

SWAGE IN OPERATION

SECTIONAL VIEW

(Sold with unqualified warranty)

Rhodes Upper Circular or Gang Saw Swage.

(For Solid Saws or Chisel Bits, 5 to 16 gauge)

No. 63—Large size, complete with all attachments, f. o. b. Grand Rapids, **\$75 00**
 No. 64—Small size, complete with all attachments, f. o. b. Grand Rapids, **65 00**

No. 63 Large size
 No. 64 Small size

Approx. Weight
 100 lbs.
 50 lbs.

Floor Space
 10x10 in.; 20 in. high
 9x9 in.; 18 in. high

Code Word
 Unapproached
 Unapproachable

Rhodes Upper Circular or Gang Saw Swage

Many of these machines have been used for 15 years and are in perfect order. No user of large, solid circular or gang saws can well do without this machine. Over 1,600 users of Rhodes Swages in the United States, Canada and other countries. No other swages have given such uniform satisfaction.

RHODES SWAGES HAVE BEEN SOLD TO OVER TWENTY-FIVE SAW COMPANIES.

Having the saw round, the swage keeps it round, as each tooth will enter the swage alike. The machine is readily adapted to any kind of work, and if fine results and durability are what a customer wants, he will obtain such advantages in purchasing this swage.

POINTS OF ADVANTAGE.

WELL MADE—Of best iron and steel, with abundant power and strength.

RAPID—Swages from 8 to 15 teeth per minute.

DIRECT PRESSURE—On top of tooth. No roll to die. Face of tooth left perfectly straight. A perfect machine for preserving hook.

PERFECT CLAMPING DEVICE—Clamps catch tooth close to point. Large bearings on sides to prevent slipping or buckling.

VARIABLE USE—For saws any diameter, 5 to 14 gauge, hard, brittle or soft. It works on all with good results.

ADJUSTABLE—To any shape of tooth, to any style of swaging, long or short, light or heavy.

FULLY WARRANTED.

SAVING—It saves the saws, makes a strong, lasting, fine cutting saw tooth, and saves the time and labor of the saw filer.

LEVERAGE—Easy and powerful for heaviest and hardest plate.

DESIGNED—For solid saws or chisel bits. Effects a great saving to users of chisel bit saws.

This machine is made in two sizes, the larger size for circular saws of the heaviest gauge, the smaller size for small saws of lighter gauge, such as lath and bolter saws, edger and factory rip saws that require a swaged tooth. The Rhodes Upper Swage operates only by direct pressure of die on top of tooth. If you prefer face swaging, buy the Rhodes Upper Swage or the Hanchett Swage.

DESCRIPTION OF CUTS.

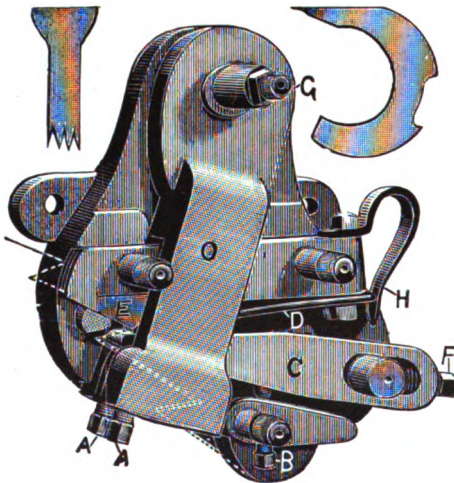
The anvil on which the face of tooth rests is inserted in the anvil stock. The swaging die is operated by an eccentric that plays on the steel block resting on top of die. The die is adjustable forward and backward to regulate its reach on tooth, by means of the rear adjusting screw. The toothstop plays against the rear spring and always stops all teeth uniformly according to its adjustment. The stroke of the swaging lever is checked by a stop screw which regulates the pressure of the die on tooth and thus affects the spread of the tooth. The vertical screw through top of machine regulates the position of toothstop with respect to edge of anvil. Full directions with machine.

JOS. E. GEBOTT, FILER FOR R. G. PETERS SALT AND LUMBER CO., MANISTEE, MICH. We have had one of your Circular Saw Swages in use in our mill for the past four years, and I must say I think it is the best swage in every particular I have ever used. In fact, it does its work as perfectly as can be done, and so far have had no corners lost off my saws. I can swage a 60-inch saw with eighty teeth in seven minutes easy. It is a dandy for inserted teeth. I can swage 300 Simond's patent tooth edger points in fifty minutes, and after the points are swaged with the Rhodes Swage they will wear longer than when new.

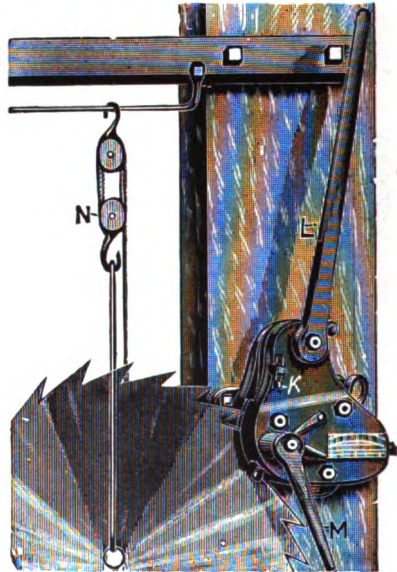
Rhodes Under Circular Saw Swage

Many of these machines have been used 14 years and are in perfect working order. This machine was designed to meet the demand of those preferring to swage solid saws on the face of tooth, and especially for the fixed inserted teeth riveted in the plate, such as the Trenton, Spalding, Emerson, Andrews, etc. For such saw teeth it is indispensable. Many of our customers using these various types of inserted saws find that their use of this swage nearly doubles the wear of a set of teeth, for the reason that the swage draws out the tooth, a process the reverse of upsetting, and has no tendency to loosen the tooth in its socket. It will also effect a great saving to users of chisel bits. If you prefer top swaging for solid saws, buy the Rhodes Upper Swage. There are over 1,600 users of the Rhodes Swages in the United States, Canada and other countries. We have customers among over twenty-five saw companies. No other swages have had so large a sale or given such uniform satisfaction. Having the saw round, the swage keeps it round, as each tooth enters the swage alike. The machine is readily adapted to any kind of work, and if fine results and a lasting machine are what customer wants, the machine will satisfy him. Remember that this machine works only by direct pressure of die on face of tooth.

Samples of swaged teeth mailed on application.



SECTIONAL VIEW



SWAGE IN OPERATION

No. 62. The Rhodes Under Circular Saw Swage.

(For Solid Saws, Inserted Teeth or Chisel Bits, 5 gauge or lighter)

Price, complete with all attachments, f. o. b. Grand Rapids, \$75 00

Approx. Weight, 100 lbs. Floor Space, 10x12 in.; 22 in. high. Code Word, Inserted

DESCRIPTION OF CUTS.—(E) is an anvil inserted in the die stock on which the back of tooth rests. (C) the swaging die is raised against the tooth on the anvil by means of the yoke (O), elevated by the eccentric (G). The die (C) is set forward or backward by screw (F). The toothstop (D) plays against spring (H). Screw (B) regulates the toothstop. Lever (L) moves the eccentric. (K) is a stop for lever (L). Lever (M) operates the clamp. Saw is raised to proper position by tackle (N). Full directions with machine.

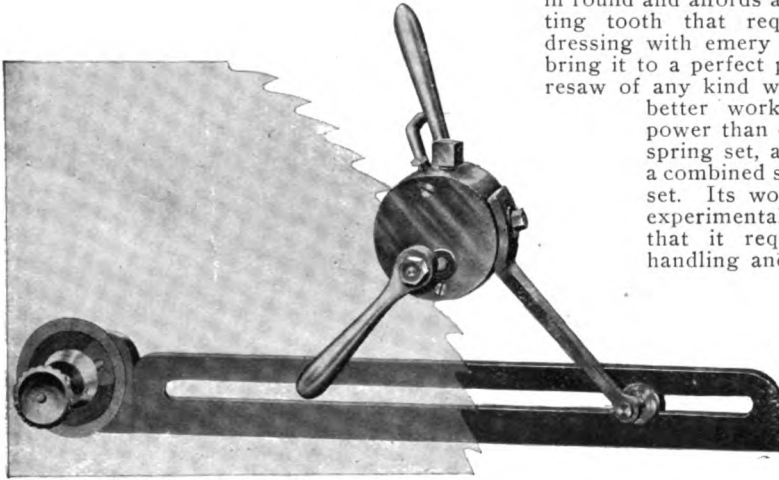
HAM. MCCLELLAN, KUSHEQUA, PA. I have been using your "Under" Swage for three years and find it a perfect machine. I claim it is a half saving on teeth, files and labor. I have never lost a corner off a tooth since using your swage, and I can cheerfully recommend them to any one using inserted tooth saws.

J. A. RICKER, FILER FOR GLEN UNION LUMBER CO., GLEN UNION, PA. I have tried swage thoroughly and would recommend every filer to buy one, for it is no trouble to keep up a saw and keep it round. Don't take half the filing or gumming and I have not lost a corner or split a tooth in three months unless saw struck a stone or iron.

GEORGE A. NEAL & CO., DONIPHAN, MO. We can say for the swage purchased of you that it is the best swage we ever used, and it has given us perfect satisfaction. It hangs where it was placed two years ago and it has never cost us a cent for repairs nor failed to do its work satisfactorily. We cheerfully recommend it as being a first-class swage in every respect.

Bolton Circular Resaw Swage.

This swage is adapted to saws from 13 to 20 gauge, of any diameter not over 42 inches, and to all ordinary shapes of teeth. The work of the swage is rapid and is vastly superior to the upset swage, as it makes a better corner, keeps the saw in round and affords a sharp, keen cutting tooth that requires but little dressing with emery wheel or file to bring it to a perfect point. A swaged resaw of any kind will do more and better work and take less power than one fitted with a spring set, an upset, or with a combined swage and spring set. Its work is in no way experimental, further than that it requires intelligent handling and saw teeth that

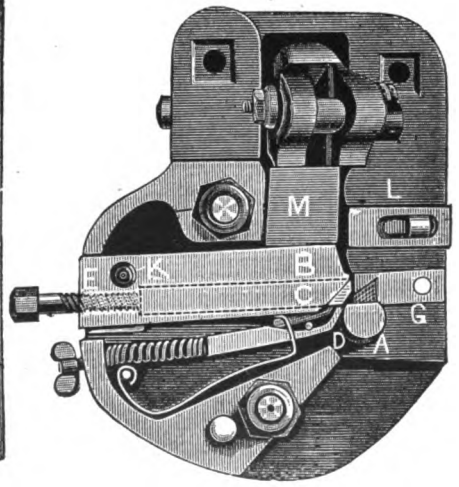
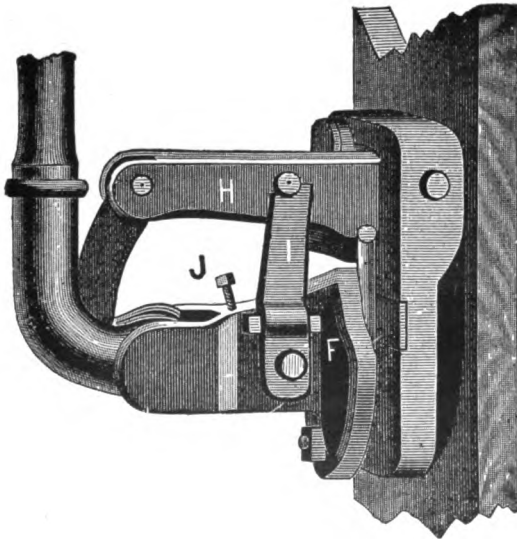


Bolton Circular Swage for Small Rip and Resaws, No. 67.

Price \$30 00.

are fairly uniform in hook and pitch of the back. This Swage is found very efficient and satisfactory for shingle saw swaging and is recommended to every operator of shingle mills.

Kinney Circular or Gang Saw Swage.



No. 90. Kinney Swage. \$75 00.

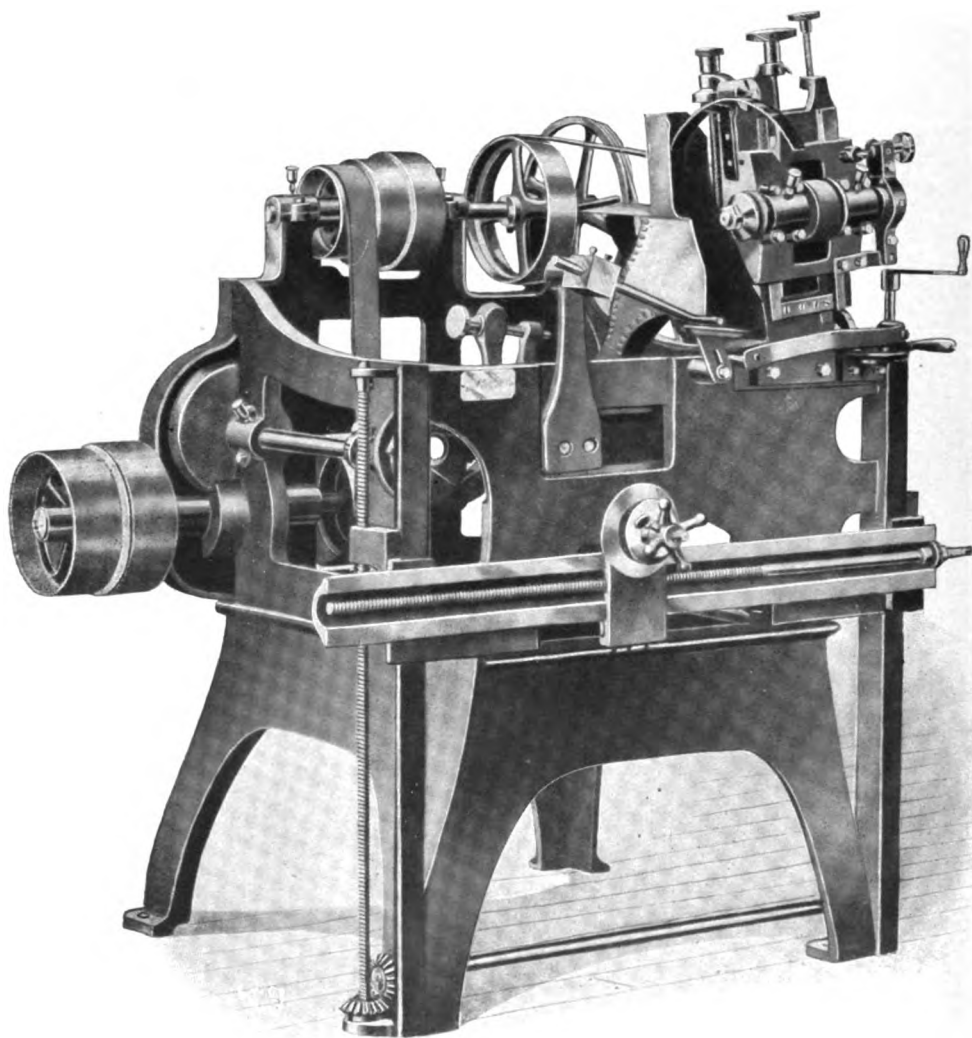
Weight, 250 lbs.

*Boxed for export f. o. b. New York, \$80 00.

Code Word, Kinney.

The interior view shows our improvements, consisting of the die and die holder; the die being adjustable with a screw, which will enable one to get more wear out of the die, and is removable to allow swaging saws of different shaped teeth from the same die.

This Sharpener is built with every particle of the idea of cheap material or labor costs left out.



(Sold with unqualified warranty)

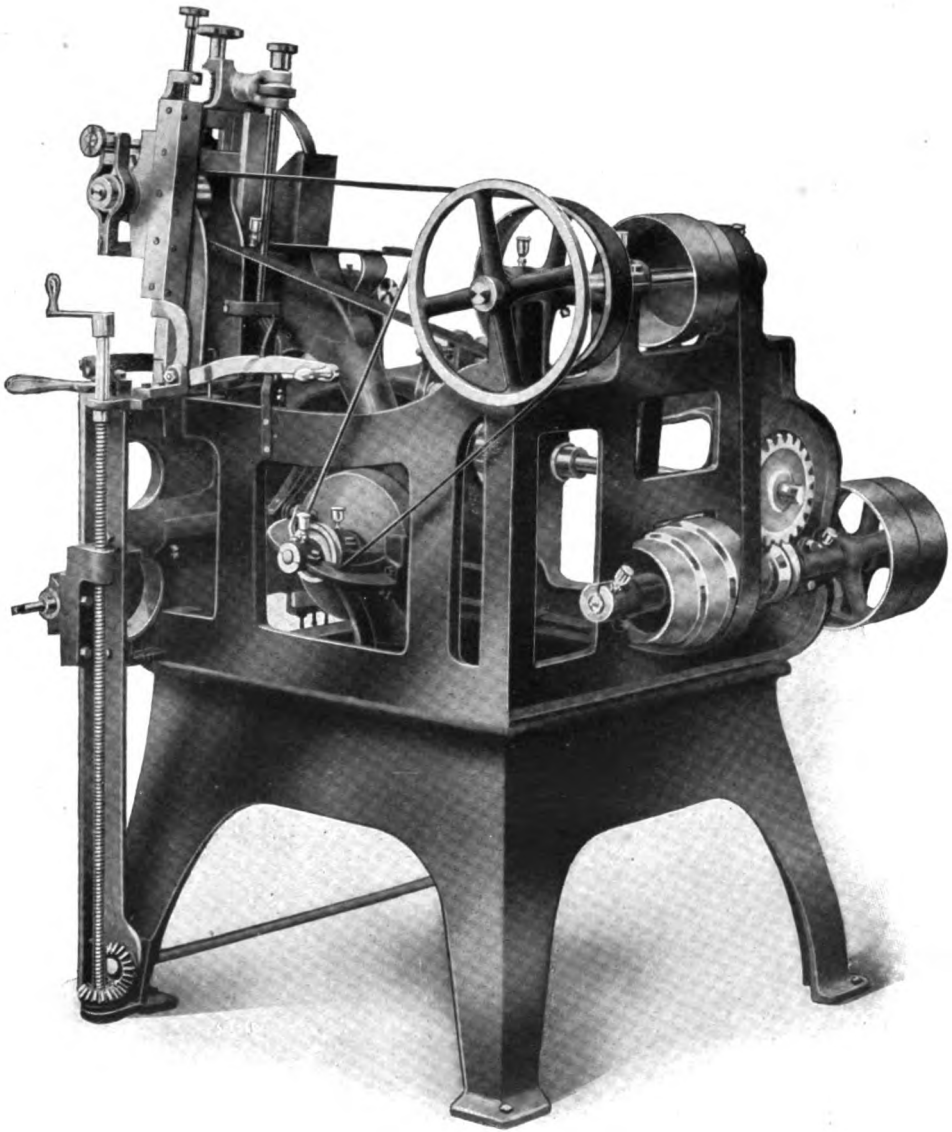
No. 238. Bolton Automatic 12 to 72-Inch Circular Rip Saw Sharpener.

Essential working parts similar to the Bolton No. 1 Band Sharpener, being heavy, rigid well built and efficient. The inclined and rotating forms readily adjustable to any style of tooth. The head provided with lateral adjustment for emery wheel arbor. Three speeds for wheel. Blower and piping for dust. Double slide head. Reduced loose pulley. Coarse lead screw feed for shifting saw to position. Quick positive clamp. Furnished with internal belting and one 12-inch wheel. Forms shaped for outlines of teeth submitted with order. Sold with unqualified warranty.

Approx. Weight 1000 lbs.	Driving Pulley 10 in. 3 in. Belt	Speed 600 30 Teeth	Floor Space 43x48 55 in. high	Code Word Rip	Price \$150 00
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With order give size of saws, arbor holes and template of teeth.

15 Per Cent. Advance in price for boxing and delivery f. o. b. cars New York for export



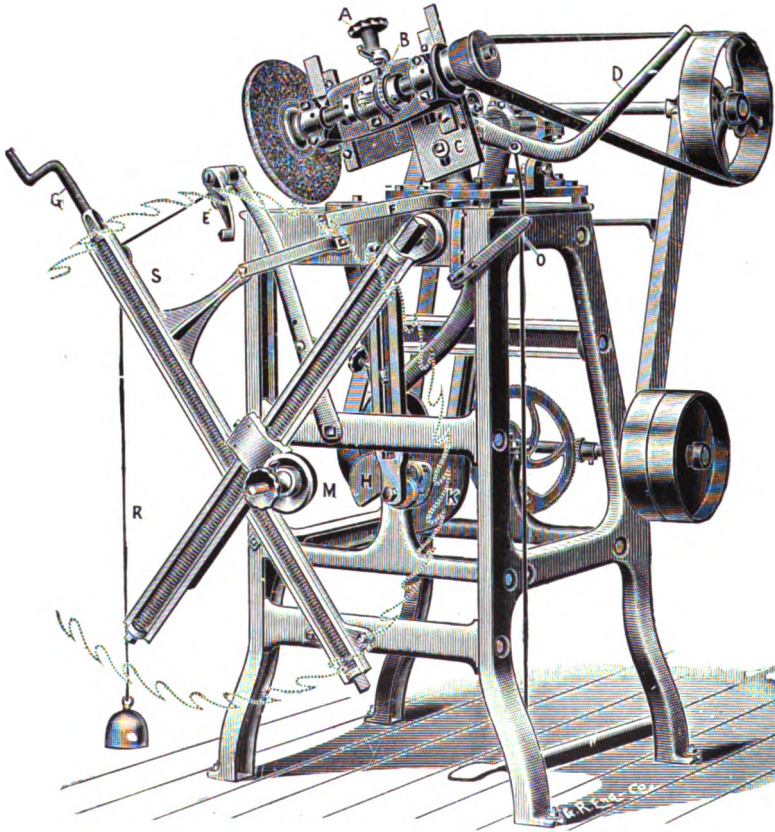
No. 238 Bolton 72-Inch Circular Rip Saw Sharpener. \$150.

(Rear view)

Essential working parts similar to the Bolton No. 1 Band Sharpener, being heavy, rigid, well built and efficient. The inclined and rotating forms readily adjustable to any style of tooth. The head provided with lateral adjustment for emery wheel arbor. Three speeds for wheel. Blower and piping for dust. Double slide head. Reduced loose pulley. Coarse lead screw feed for shifting saw to position. Quick positive clamp. Furnished with internal belting and one 12-inch wheel. Forms shaped for outlines of teeth submitted with order. Sold with unqualified warranty.

Rhodes 72-inch Automatic Circular Saw Sharpener

Our No. 69 Automatic Circular Sharpener is adapted to the solid and inserted tooth rip saws in general use in sawmills and woodworking establishments using large circular saws. It is readily adjusted to any diameter of saw, any hook, any spacing and any shape for back of tooth, that is ordinarily used. The emery wheel has slow motion over back of tooth and quick motion to throat, and accomplishes a large amount of grinding in once around saw. The wheel does not work on the slide head principle, but passes the point and rocks into the throat, touching nearly the entire face of tooth at once. The motion avoids liability of burning or casehardening the point. The emery wheel has vertical



(Sold with unqualified warranty)

No. 69 Rhodes 72-Inch Automatic Circular Saw Sharpener. \$125.

Approx. Weight
1000 lbs.

Driving Pulley
2½ x 11 in.
2 in. Belt

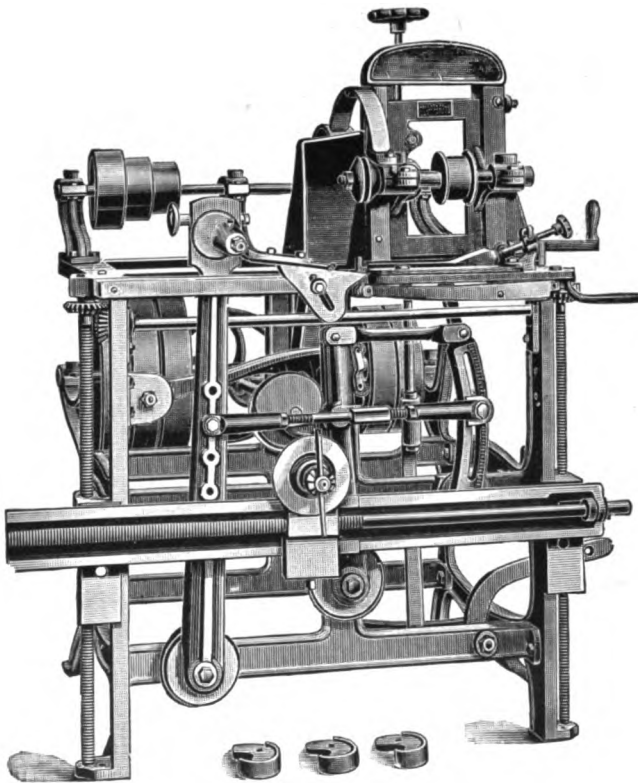
Speed
100
30 feet

Floor Space
40x40 in.
66 in. high

Code Word
Sharpener

10 Per Cent. advance for Boxing and delivery f. o. b. cars New York for export

and lateral adjustments by thumb wheels. These movements are fine and accurate and very efficient for face grinding. The form that governs the shape of teeth is very readily changed to give any shape throat desired. If furnished with a templet showing eight or ten teeth and the diameter of the several saws to be fitted, we can shape the cam and adjust the machine closely to requirements before making shipment. The machine is belted and furnished with one 12-inch wheel. All shafting one inch. The machine is substantial and rigid in construction and does excellent work.



No. 70. 12 to 72-Inch Covell Automatic Circular Rip Saw Sharpener. \$175.

This Sharpener is adapted to the solid and inserted tooth rip saws in general use in sawmills and woodworking establishments using large circular saws. The emery wheel works on the slide head principle. It is readily adjusted to varying requirements. The machine is substantial and rigid in construction and does excellent work. Five dollars extra for belting and wheel.

Approx. Weight
800 lbs.

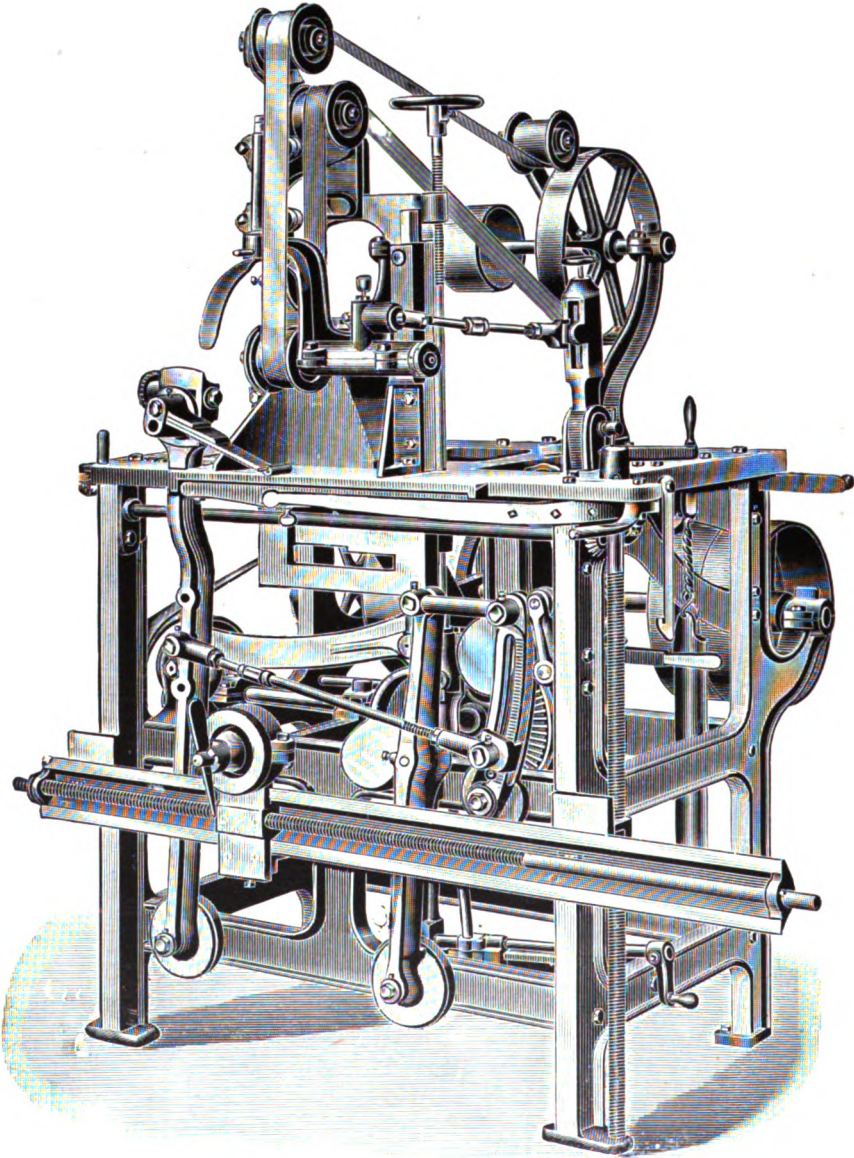
Driving Pulley
2½ x 12 in.
2 in. Belt

Speed
200

Floor Space
11 sq. ft.
Boxed, 42 cubic ft.

Code Word
Sharpen

Boxed for Export f. o. b. New York, \$195.



No. 71A Automatic Rip and Cut-Off Circular Saw Sharpener for 12 to 72-Inch Saws. \$200.

Floor Space

48x5 in.

Extreme Height

6 ft. 3 in.

Code Word

Unqualifying

Blower for machine will be furnished if so ordered at an extra cost of \$20.00.

1 Crate 4 ft. 2 in. x 4 ft. 5 in. x 3 ft. 7 in. 66 cubic feet

Gross

1841

Net

1325

1 Box 5 ft. 6 in. x 1 ft. 3 in. x 1 ft. 1 in., 7½ cubic feet

191

125

Emery Wheel and Belts for this machine \$6.00 extra.

Pulleys on countershaft are 14-inch diameter, 4-inch face. Speed, about 185 revolutions per minute. Size of emery wheel used, 12-inch diameter, 15-16 hole. Thickness to suit the size of saw teeth. Weight of machine, about 1,450 pounds.

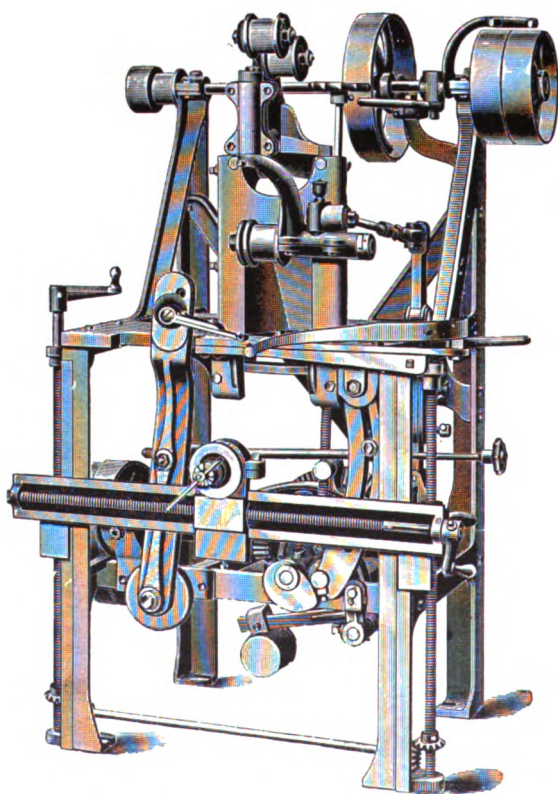
Price, Boxed for Ocean Shipment, f. o. b. New York, \$225.

Description of Number 71A Automatic Circular Saw Sharpener.

This machine is so constructed that both rip and cross-cut saws from 16-inch to 72-inch can be gummed and sharpened automatically; only a slight change is necessary from one style of saw to the other. The construction of the machine is such that it will bevel both front and back of saw teeth on cross-cut saws, and will be shipped in this way unless otherwise ordered, but if desired can be made to bevel the front of the teeth and leave the back square, or square on the front and bevel on back, but only one device is furnished with each machine, so in ordering state plainly which device is wanted.

INSTRUCTIONS.

For operating and adjusting this machine put the saw on center pin in cross head, use the cone that will fit the hole in saw, put on the notched washer and fasten with wedge so that the saw will move easy, but snug. Adjust the saw on cross bar so that the front of tooth will be in straight line with the front of emery wheel, and so that the bottom of tooth will be about one-half inch above the top frame. To adjust the stroke of feed finger raise or lower connection rod in notched lever. If this is not sufficient raise or lower the other end of connection rod in feed arm until the feed finger draws over one tooth and about half way back on the second. Then turn the cone pulley on left side of machine by hand until the feed finger strikes the front of tooth, and move same in straight line with front of emery wheel. Let the emery wheel come down, and see if it follows the tooth, if the proper cam form is on, and if it does not follow the tooth, adjust the connection rod (that raises and lowers emery wheel) in lower end by means of the screw, by drawing the connection toward the side frame, the emery wheel will raise less, and if moved the other way will raise more. The emery wheel is adjustable up and down by means of screw with hand wheel on top of machine. In raising and lowering the wheel the connection in the top of swinging lever should also be adjusted (which is done by a small hand wheel attached to a screw) so that when the emery wheel is on top of saw tooth the connection rod is straight with the top frame of machine. This in particular when used for rip saws or saws that have to be swaged, so that the tooth will be square with the saw. When the machine leaves our factory it is set for straight-toothed saws. To change for bevel teeth remove small pin in lower end of shifting lever, drop the swivel into the shifting wheel and put pin back through both pieces. Remove one of the pins in the center part of shifting lever and place the other one so that you can get the desired bevel on the tooth. Put on the proper cam form which operates the emery wheel. The screw in front of machine which the saw is held against by the clamping spring is adjustable out and in by means of a screw with a small hand wheel placed inside the top frame. In sharpening bevel toothed saws care must be taken that the emery wheel grinds the same amount on front of each tooth. If not, one side of the saw will be longer than the other. The above screw is for regulating this according to the thickness of the saws. The cross head can be adjusted by loosening the head in the holder and screwing it either out or in. The face of this head should be in straight line with resting screw at all times, and so that center of emery wheel is in center of saw. As there are saws of different thicknesses, these adjustments are very necessary. There are two cone pulleys for operating the feed mechanism. If saws with small teeth are sharpened use the fast speed, and for large teeth use the slow speed. We send several cam forms with each machine, which will make any ordinary shape of teeth, but if other shapes are desired file cam forms to suit.



No. 72 Automatic Rip and Cut-Off 4 to 24-Inch Circular Saw Sharpener. \$75.

Boxed for Export f. o. b. Cars New York, \$85 00.

No. 71 Automatic Rip and Cut-Off 6 to 50-Inch Circular Saw Sharpener. \$150.

Boxed for Export f. o. b. Cars New York, \$165 00.

	Approx. Weight	Driving Pulley	Speed	Floor Space	Code Word
No. 71	685 lbs.	9x2½ in.	475	8 sq. ft.; boxed, 36 cubic ft.	Unqualify
No. 72	300 lbs.	5½x1½ in.	550	4 sq. ft.; boxed, 14 cubic ft.	Unqualified

Belting and Wheel for No. 71, \$5.00; for No. 72, \$3.00 extra.

The No. 72, 4 to 24 Inch Sharpener

The Automatic Rip or Cross-Cut Circular Sharpener illustrated is built in two sizes. The No. 72, 4 to 24 inch, Sharpener is constructed especially for use in factories where small circular saws are used, both cross-cut and rip saws, and it will keep the saws perfectly true and ground even at all times. Saws sharpened on an automatic sharpener of this kind will do more and better work by far than saws sharpened by hand sharpener or by filing, and there is a big saving in files, as emery wheels cost but little compared with files. This machine will sharpen cross-cut saws from 4 inches to 22 inches and rip saws from 6 inches to 24 inches in diameter. It sharpens cross-cut saws bevel on both sides of teeth and will sharpen rip saws square so they can be swaged if desired.

Size of emery wheel used, 8 inches diameter, $\frac{5}{8}$ hole.

The No. 71, 6 to 50 Inch Sharpener

The No. 71, 6 to 50 inch Sharpener, is constructed especially for cross-cut, small rip and shingle saws. It will sharpen cross-cut saws from 6 inches to 44 inches, rip and shingle saws from 12 inches to 50 inches in diameter, and it is so constructed that both right and left hand shingle saws can be sharpened without removing the flanges. This machine is so constructed that it will sharpen saw teeth square or beveled, as desired. Rip saws are generally sharpened square when swaged, but if spring set is used a little bevel is very desirable. This applies especially to shingle saws. Cross-cut saws are always bevel on front of teeth, and leave them straight on the back.

If desired we can make this machine so it will bevel the saw teeth on both front and back. This will be done only when so ordered.

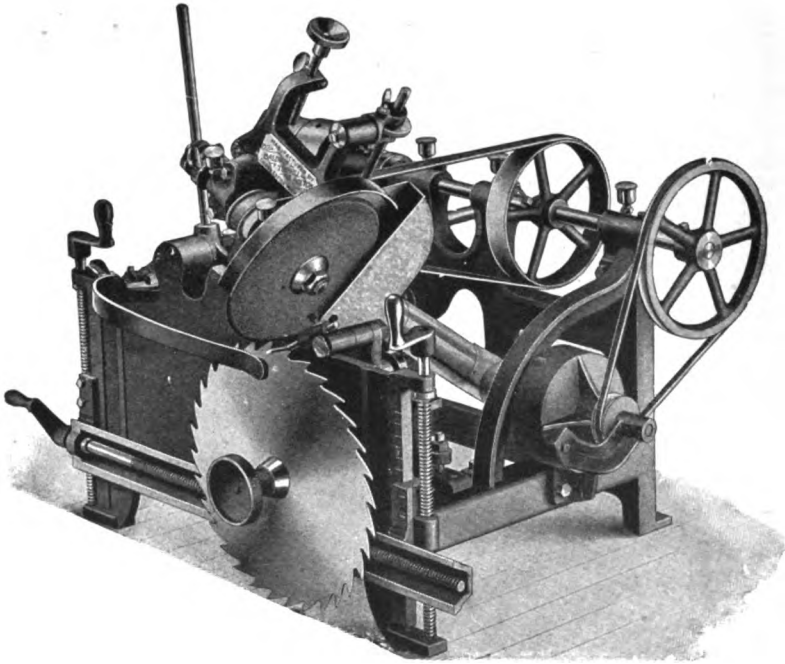
Blower will be furnished for the machine, if so ordered, at \$15 extra.

Size of emery wheel used, 10 inches in diameter, 15-16 hole.

THE GENERAL DIRECTIONS.

THE GENERAL DIRECTIONS for adjustment of these sharpeners are alike. Put the saw on center pin in cross head, using the cone that will fit the hole in saw; put on notched washer and fasten with wedge so the saw will move easy but snug. Place saw so that the bottom of tooth is one-half inch above the top of the machine, then lock saw with the clamping spring. Adjust the saw on the cross bar so that the front of the saw tooth will be in straight line with the emery wheel. To adjust the feed finger raise or lower connection rod in notched lever until the feed finger draws over one tooth and half way back on the second, then turn the large cone pulley on side of machine by hand until the feed finger strikes the face of the tooth. In other words, when the emery wheel is in the bottom of the tooth the feed finger must begin to feed the saw, when the emery wheel commences to raise. The machine is set for grinding square when it leaves our factory. To change from square to bevel remove one of the two pins in the center part of upright lever. Then remove the small pin near the lower end of same lever and let the hinged piece enter into the shifting wheel. Then put small pin back through both the hinged piece and the lever. When the pin in center part of upright lever is in the lower hole, that will make the most bevel, and when in the top the least. The front bar just under the top of the machine, and where the saw is held against it by the clamping spring, is adjustable out and in by a screw in end of lever to the right of machine. Care must be taken when grinding bevel-toothed saws that the emery wheel grinds the same amount on the front of the teeth, or the one side of the saw will be longer than the other. This rest will, therefore, have to be adjusted according to the thickness of the saws. The shifter for shifting the belt on tight and loose pulleys is shown to belt the machine from above. If belted from below, turn the shifter downward and it will fit just as well.

There are two cone pulleys for operating the feed mechanism; if a saw with teeth less than five-eighth inch from point to point, use the fast feed, and for larger teeth use the slower feed. The cross head is adjustable out and in by turning to the left and right, first loosening clamping screw on the right side of the cross head roller. This can be screwed in far enough so that the flange of a shingle saw does not have to be removed while being sharpened. Care must be taken that the saw is in straight line with the emery wheel. The ordinary cross heads are made for saw's eyes from one to two inches, but we will make any size if specified with order. We send several cam forms with machine, which will make any ordinary shape of teeth, but if other shapes are desired file cam forms to suit. If tracing of saw teeth is furnished us with order the machine will come ready for use.



(Sold with unqualified warranty)

No. 77. Bolton 4 to 26-Inch Circular Rip or Resaw Sharpener. \$75.

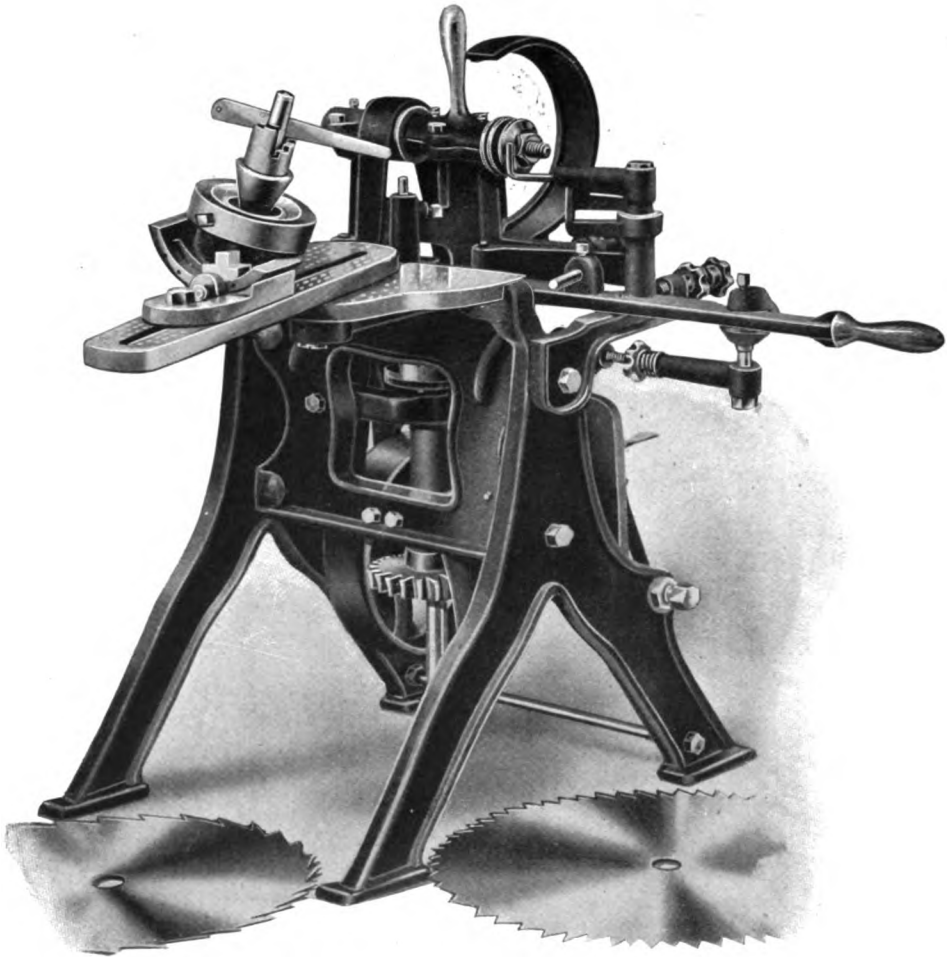
Approx. Weight 250 lbs.	Driving Pulley 3½ in. 1¼ in. Belt	Speed 750 30 Teeth	Floor Space 26x30 in. 30 in. high	Code Word Particular
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For sharpening small circular rip saws from 4 to 26 inch diameter, we offer the above machine, which is entirely automatic, having an adjustable cam to give shape to back of teeth, a positive feed finger, adjustable; and adjustments for regulating the grind on top and face of tooth so that you can readily secure any hook, depth of throat, and shape of back that you may desire. The head carrying wheel works on a slide and grinds perfectly square on back and face of tooth. The machine keep the saw in perfect round and balance, so that every tooth does its share of the work and saws run easier and cut better than when fitted by hand on a bench grinder. It fits the saws rapidly. Saws well fitted run easier, cut smoother and straighter, and consequently make more and better lumber than will poorly fitted saws. A very desirable sharpener for factory or small saw requirements.

Size of emery wheel, 8 inch diameter, ¼ hole. Blower and piping for dust.

With order give tracing of saw teeth and size of saws and arbor holes.

10 Per Cent. Advance in price for boxing and delivery f. o. b. cars, New York for Ocean Shipment.



No. 92 Automatic Circular Saw Sharpener for Rip or Crosscut Circulars up to 40 inches diameter, a very popular machine for Sawmills or Factory Filing Rooms. Over 3,000 sold.

No. 92 Semi-automatic.....	Price \$50.00	Code word.
No. 92 Automatic, with table, tools, emery wheels and dresser.....	65.00	Buff
Weight, 200 lbs. Driving Pulley, 4-inch. Speed, 900.		
10 per cent. advance for boxing and delivery at New York for export.		
		Buffer

The No. 92 is a handy machine, especially adapted for sharpening rip and cross cut circular saws, from 6 to 40 inches in diameter. It not only sharpens the teeth perfectly in less than one-third the time required for hand filing, but it keeps them gummed and uniform in size and shape. No files are needed except for very fine teeth.

All the work is done with precision. Screw stops and guides control the movement of the saw and wheel.

Two larger sizes are manufactured as follows:

No. 93, for saws 8 to 48 inches diameter.

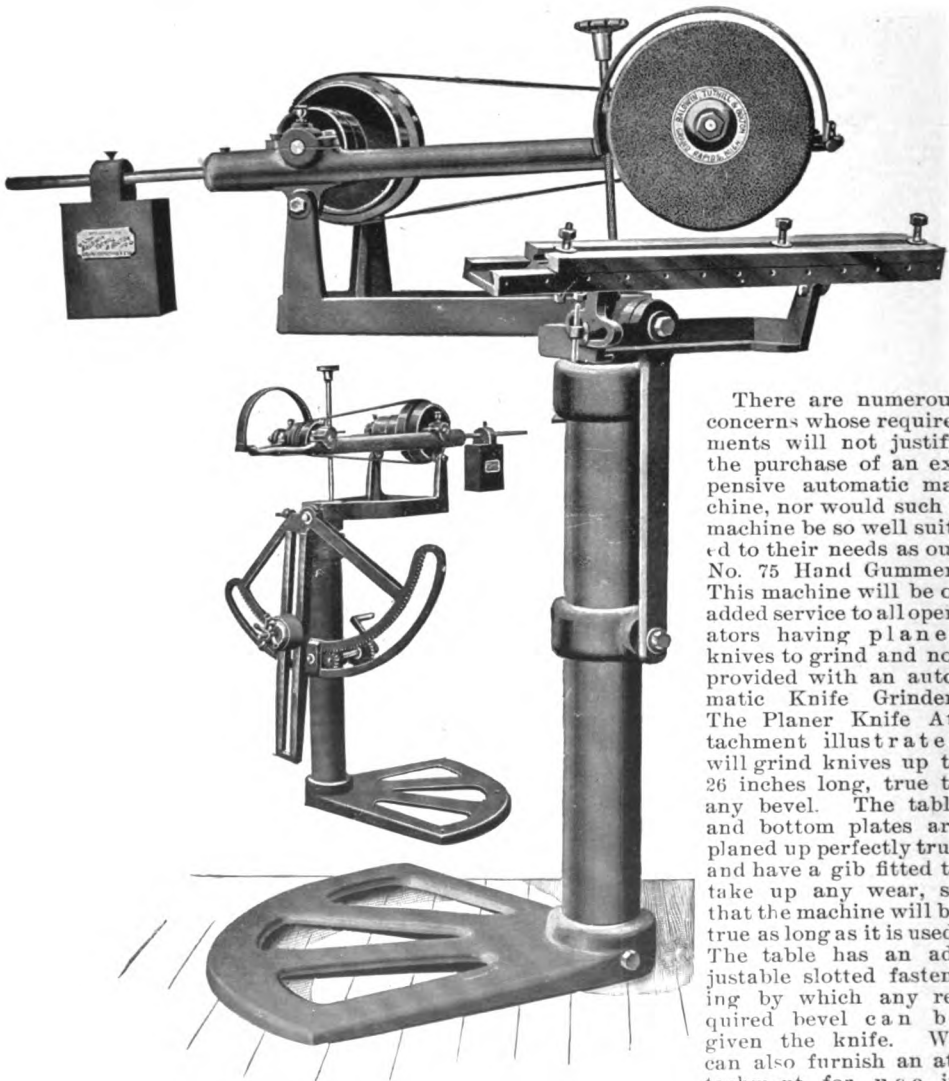
No. 93 Semi-automatic.....	Price \$85.00	Code word.
No. 93 With automatic attachment for rip saws.....	85.00	Buffing
Weight, 250 lbs. Driving Pulley, 6-inch. Speed, 600.		
		Buffered

No. 94, for saws 8 to 72 inches diameter.

No. 94 Semi-automatic.....	Price \$ 75.00	Code word.
No. 94 With automatic attachment for rip saws.....	100.00	Buffet
Weight, 400 lbs. Driving Pulley, 6-inch. Speed, 600.		
		Buffered

Bolton Large Circular Hand Gummer and Knife Grinder.

Our No. 75 Hand Gummer is admirably adapted to the fitting of all classes of saw-mill, planing mill and general wood-working rip and cut-off saws, ranging from 14 to 72-inch diameter. It is especially suited to concerns that require a machine with an extreme range in capacity combined with a low price. Small saw mills, shingle mills, etc., will find this machine adapted to their every requirement. The machine is simple, quickly adjusted to different sized saws, and positive in operation. It is particularly heavy, strong and rigid, furnished with 12-inch wheel, guard for wheel, babbitted boxes, 2 speeds to suit the wear of wheel, oil cups, belt and cone to suit the size of mandrel hole.



There are numerous concerns whose requirements will not justify the purchase of an expensive automatic machine, nor would such a machine be so well suited to their needs as our No. 75 Hand Gummer. This machine will be of added service to all operators having planer knives to grind and not provided with an automatic Knife Grinder. The Planer Knife Attachment illustrated will grind knives up to 26 inches long, true to any bevel. The table and bottom plates are planed up perfectly true and have a gib fitted to take up any wear, so that the machine will be true as long as it is used. The table has an adjustable slotted fastening by which any required bevel can be given the knife. We can also furnish an attachment for use in sharpening drag or long crosscut saws at \$15

(Sold with unqualified warranty.)

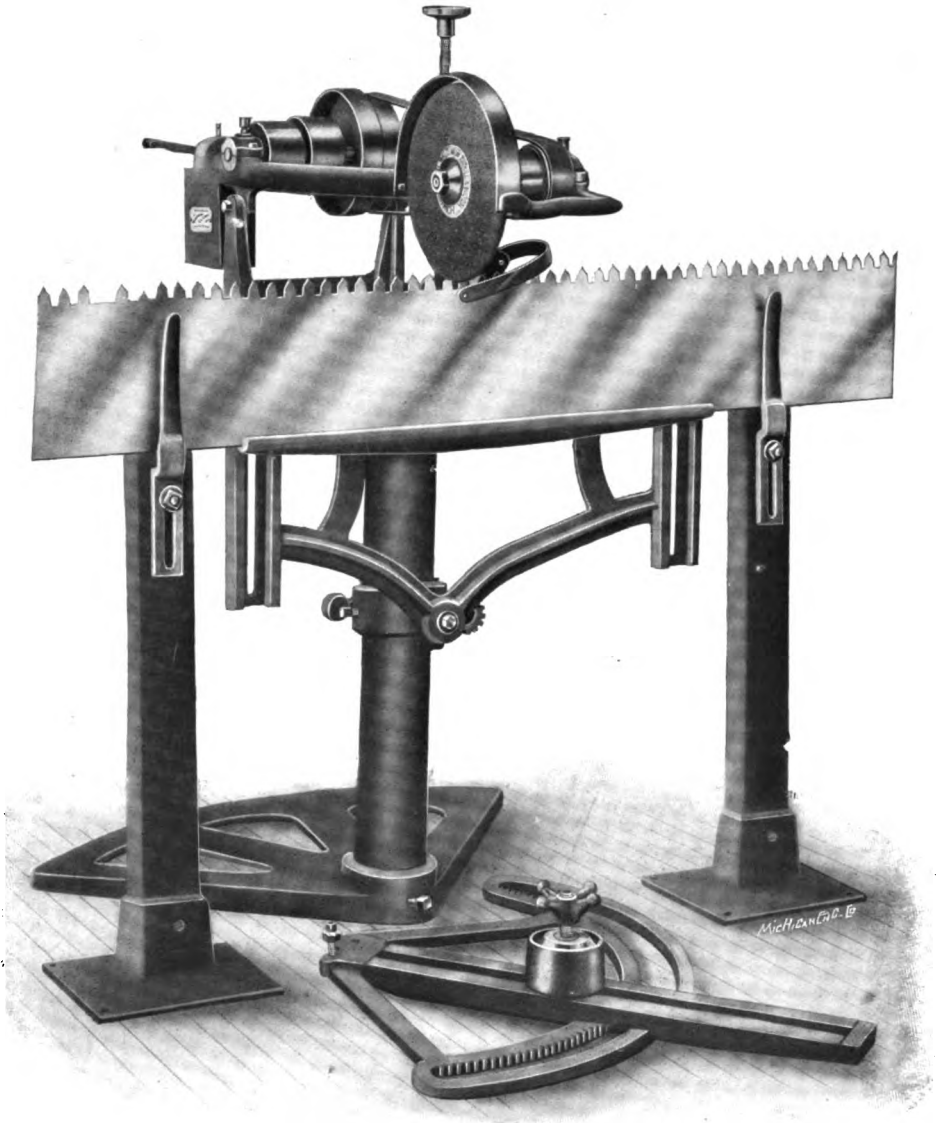
Bolton 72-inch Hand Rip and Cut-off Gummer.

extra for either No. 75 or No. 76.

No. 75. Price, with belt and wheel, \$35. No. 76. Price, with belt, wheel and planer knife attach't. \$50.

Approx Weight.	Driving Pulley.	Speed.	Floor Space.	Code word.
No. 75 450	4½ inch; 2-inch Belt.	825	Boxed 24x28x40.	Select.
No. 76 500	"	"	"	Selected.

15 Per Cent. Advance in Price for Boxing and Delivery at New York for export.

Drag Saw Attachment for No. 75 Saw Gummer

Long Saw Attachment for No. 75 Bolton Gummer.....\$15.00

No. 75 Bolton 72-inch Circular Gummer, with long saw attachment.. 50.00

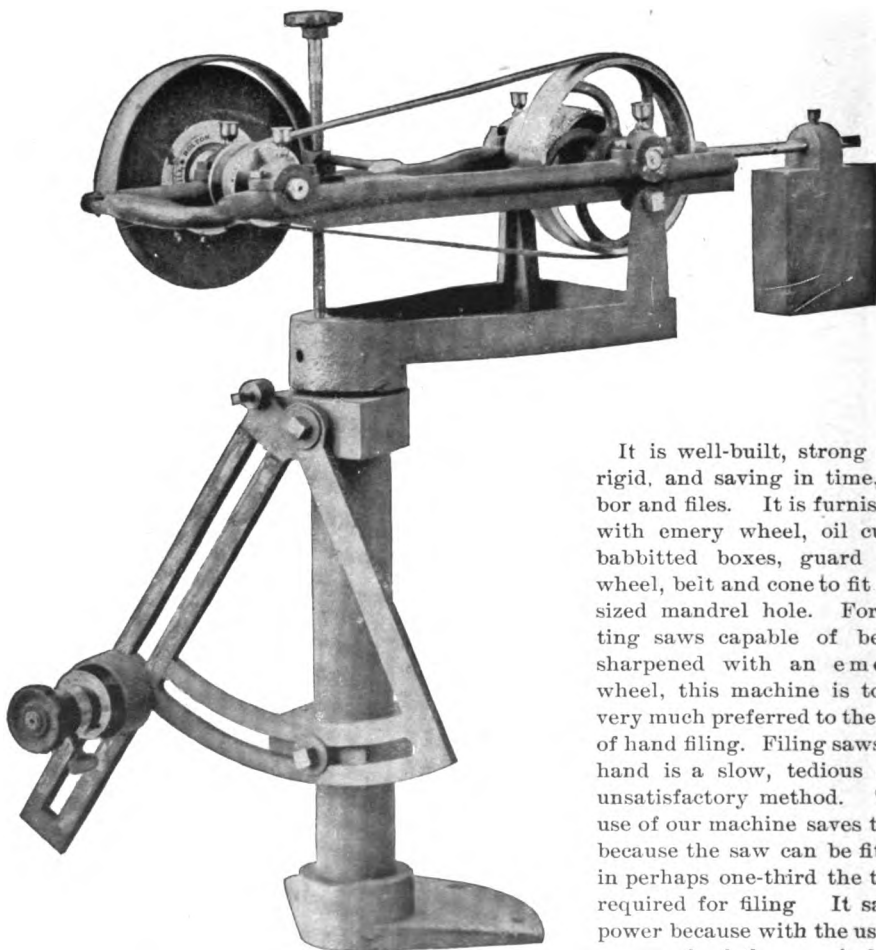
No. 76 Bolton Gummer, with Planer Knife and Long Saw Attachment. 65.00

The cut illustrates the Bolton 72-inch hand rip and cut-off circular saw gummer, set up for gumming drag or crosscut saws, the quadrant or holder for circular saws being illustrated on floor. This long saw attachment is suitable for saws of any length or width, can be quickly attached or removed, has a positive clamp for saw, and is a feature that will recommend itself to shingle or bolt mill operators or anyone having need of a long saw gummer. All iron work is supplied. The two post supports are of wood and may be erected at mill.

Bolton No. 74 Hand Rip or Crosscut Gummer



UR No. 74 Hand Gummer is admirably adapted to the fitting of all classes of saw-mill, planing mill and general woodworking rip and cut-off saws, ranging from 8 to 30-inch diameter. Its low price and convenience for variable use should recommend it to every one, even to those already equipped with a sharpener for their large saws. Our machine is simple, quickly adjusted for different sized saws, and positive in operation.



It is well-built, strong and rigid, and saving in time, labor and files. It is furnished with emery wheel, oil cups, babbitted boxes, guard for wheel, belt and cone to fit any sized mandrel hole. For fitting saws capable of being sharpened with an emery wheel, this machine is to be very much preferred to the use of hand filing. Filing saws by hand is a slow, tedious and unsatisfactory method. The use of our machine saves time because the saw can be fitted in perhaps one-third the time required for filing. It saves power because with the use of emery wheel the saw is kept

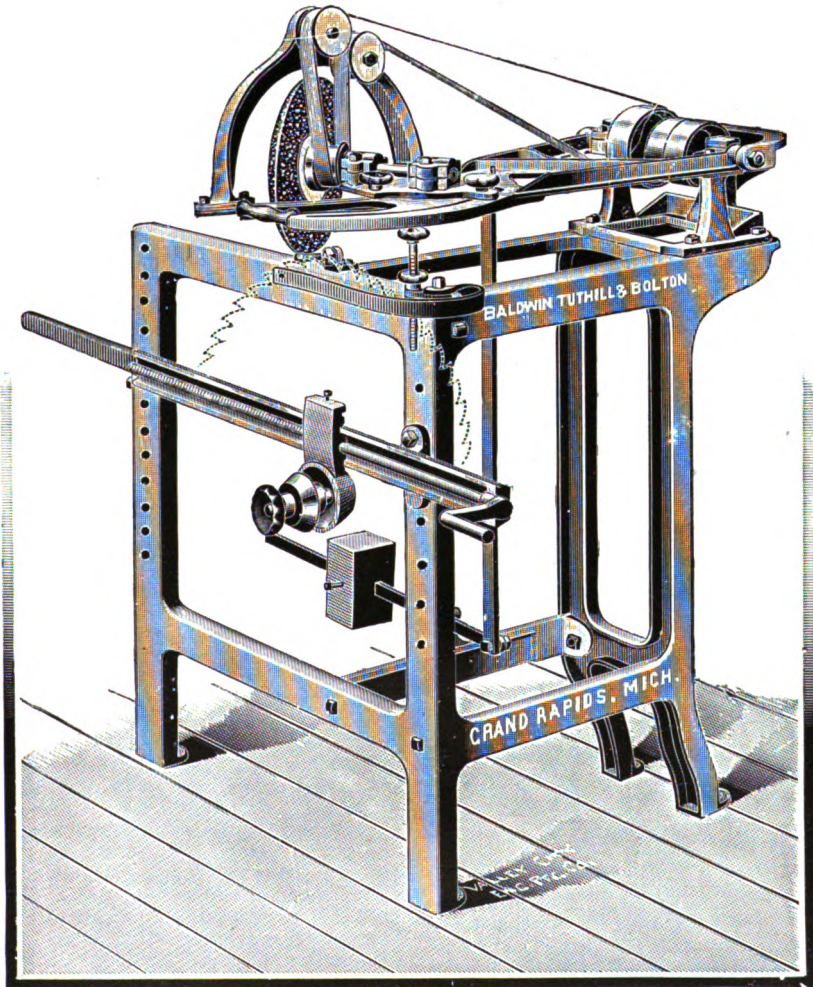
in round and balance, and each tooth performs its share of the work. It saves files because no file can approach an emery wheel in cutting qualities, and no well informed saw filer will prefer file work to emery wheel work, except where the shape of the saw teeth requires the use of files. It saves saws because very little grinding is necessary to sharpen perfectly.

Approx. Weight, 200 lbs.	Price, with belt and wheel, \$25.00 Driving Pulley. 3-inch 1/4 in. Belt.	Speed. 700	Floor Space. 24x36 in.; 36 in. high. (Boxed 18x18 in.; 36-in. high.)
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SOLD WITH UNQUALIFIED WARRANTY.

Bolton Large Hand Circular Saw Sharpener

This Sharpener is adapted to all kinds of circular saws from 10 to 72-inch diameter, such as large circulars, shingle saws, lath, edgers, cut-offs, etc. The center of emery wheel is always in line with saw. The tension of driving belt is always the same. The saw mandrel is quickly set to suit any sized saw. Reversible cones are furnished to suit



No. 73 Bolton 72-Inch Hand Rip and Cut-Off Circular Saw Sharpener.

Price, complete with Belt and Wheel, f. o. b. Grand Rapids, \$75 00

Approx. Weight.
500 lbs.

Driving Pulley.
4½-in.; 1¾-in. Belt

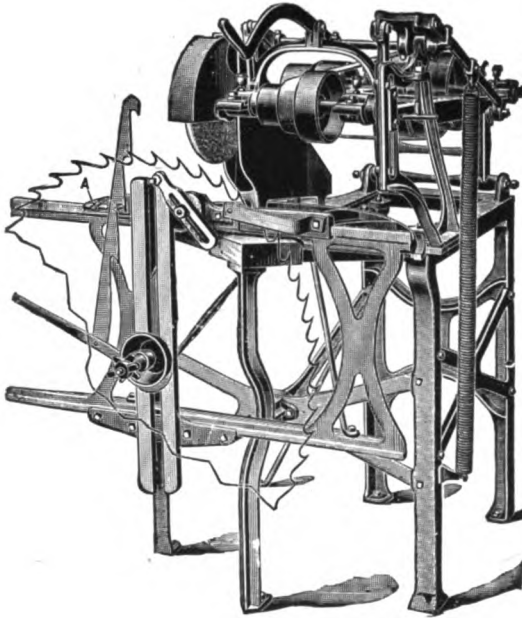
Speed.
535

Floor Space.
44 x 44 in.; 62 in. high

Code Word.
High

Boxed for export f. o. b. New York \$85.00

any sized mandrel hole. Emery wheel is quickly adjusted from rip to cut-off work. The frame carrying emery wheel is pivoted at rear of machine and can be set to give any desired pitch to emery wheel. The machine is built entirely of iron and steel and is abundantly strong, rigid and handy. All shafting one inch. Emery wheel 12-inch diameter.

The Blackmer Hand Rip and Cut-off Circular Saw Sharpeners.

No. 175. Blackmer 72-Inch Hand Rip and Cut-Off Circular Sharpener.

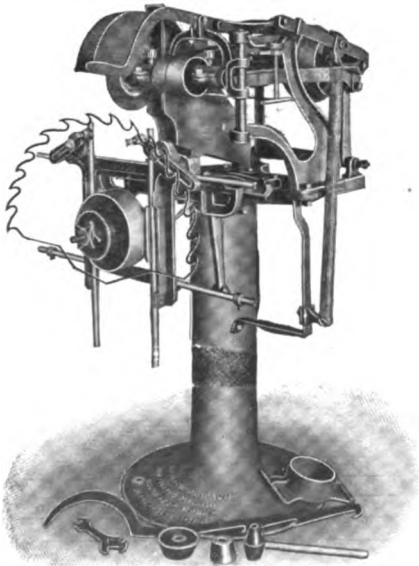
Approx. Weight
750 lbs.

Price
\$135 00

Code Word
Blackmer

15 per cent. advance for boxing and delivery f. o. b. cars New York for export.

A well built, efficient machine. When shifted for grinding bevel teeth the center of saw always remains under center of wheel, no matter how far either way the saw is swung to grind bevel teeth, or how far to one side the saw is placed to get the hook to the teeth. The wheel is carried up and down directly in line with the saw and the movement is such that there is no change in the tension of the belt. Machine has three speeds. The small machine is specially designed for edgers, shingle saws, etc., as well as all other types of rip and cut-off saws within its capacity. These machines are in use by many large mills.



No. 176. Blackmer 44-Inch Hand Rip and Cross-Cut Circular Sharpener.

No. 176 Blackmer 44 in. Hand and Rip Crosscut Circular Sharpener, 450 lbs.....**\$120 00**
Code word, Blacking.

This machine contains all the good features of the large one, and in addition is fitted with a large cup on the cross-head, which will admit of edger saws being ground without removing the collars. A smaller cup will be sent when required for saws smaller than ten inches in diameter.

For all saws of its capacity there is nothing equal to it from the fact that it is so easily and perfectly adjusted to all of the different kinds. For SHINGLE saws it will be found just what has long been needed. Every Circular or Band mill needs just such a machine as this to grind all their small saws.

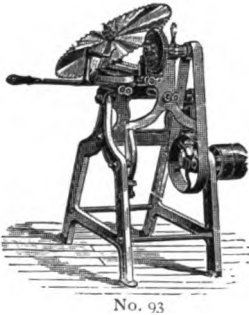
The most approved form of tooth, either square or bevel, can be made on either machine, and the change from one form of tooth to the other is made instantly. They are strong, practical, accurate, simple in construction and easy to operate.

The arrangement for jointing is complete.

There are many advantages that a hand machine has over an automatic that should be remembered. It is admitted by a majority of filers that a much better shaped tooth can be made with a good hand machine, and a much greater amount of work can be done in a given time, and requires less engineering to run it.

Among the many reasons why they have become so popular is because of the great amount and quality of the work done with them. It being so well adapted to all kinds of circular saws and the ease with which the change can be made from one kind of saw to another, that generally if the large machine is used only this one is all that is needed for all the circulars in a large mill.

Combined Automatic Rip and Hand Crosscut Sharpener



The No. 93 is designed for shingle saws and small saws, 8 to 48 inch diameter. It is heavier than No. 92, is especially adapted for mills that have a machine for their large saws, and is found to be an able helper when there is enough work for two machines, or in any place using heavy small saws. Automatic for rips but not for cutoffs.

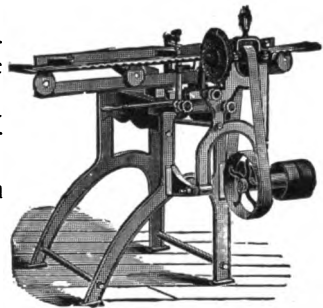
Saws sharpened on this machine do more and better work than when hand filed. They are round and true, and as every tooth does its share of the work, they keep sharp longer, SAVING TIME POWER, FILES and SAWS.

No 93	Semi-automatic.....	Price	\$65 00	Code word	Buffing
No. 93	With automatic attachment for rip saws.....		\$85 00		Buffed
	Weight 250 lbs	Driving Pulley 6-in.	Speed 600		

The No. 94 takes saws 8 to 72 inches diameter, cross cut or rip, and does small saws equally as well as No. 93. Automatic for rips but not for cutoffs.

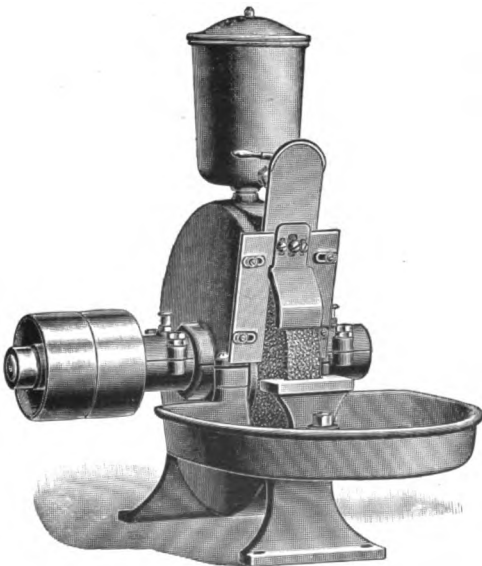
The automatic attachment on these machines can be disconnected and the machine used as a semi-automatic, the operator moving the lever back and forth by hand.

No. 94	Semi-automatic.....	Price	\$75 00	Code word	Buffet
No. 94	With automatic attachment for rip saws ...		100 00		Buffeted
	Weight 400 lbs.	Driving Pulley 6-in.	Speed 600		



No. 421 Bench Tool Grinder

For wheel 12 in. diameter, 1½ in. or 2 in. thick, 1 inch hole



Price of machine (without wheel), \$27.00
 Price of No. 1 countershaft, \$10.00 Net
 weight of machine about 75 lbs. of counter-
 shaft 45 lbs., machine (crated) 110 lbs.,
 countershaft (crated) 55 lbs. Export weight
 115 lbs., countershaft 70 lbs.

This machine is designed to meet the demands for a small wet tool grinder to sharpen machinists' or woodworking tools.

It is a well known fact that an emery wheel is superior to the ordinary grindstone for this kind of work, as it will cut very much faster, takes up less room and is cleaner.

This machine takes up bench room of only 22x16 inches and can be set up anywhere.

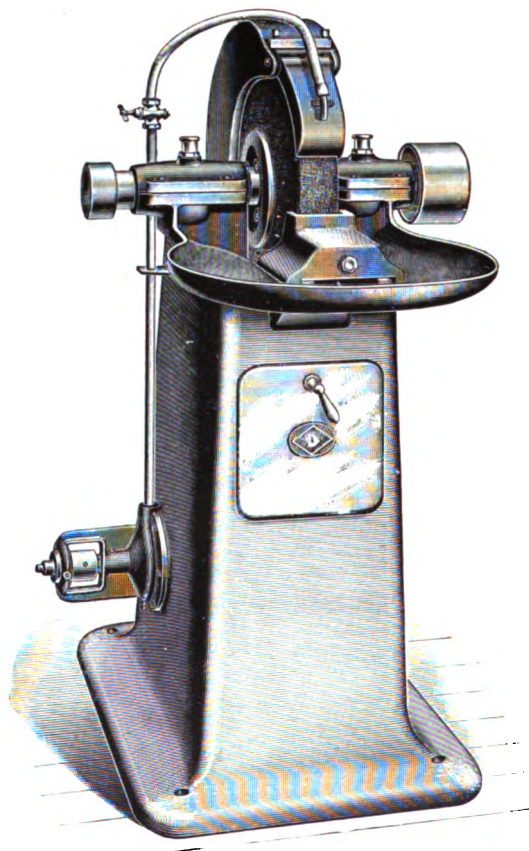
Size of spindle between flanges 1 inch.

Size of wheel 12 inch diameter by 1½ inch thick (or 12x2 inches when so ordered).

Speed of wheel, 700 to 900 revolutions.

Dimensions of pulleys on machine, 1⅜ inches diameter by 2⅝ inches face.

10 per cent. in price for boxing and delivery f. o. b. cars New York for export

Improved Nos. 1, 2 and 3 Tool Grinding Machines.**No. 1 IMPROVED TOOL GRINDING MACHINE.**

Emery wheel.....	14 in. x 2 in. x 1½ in.
Size of base	18 in. x 25 in.
Height from floor to center of spindle.....	35 in.
Diameter of spindle in bearing.....	1¼ in.
Size of pulley on spindle	5 in. x 3½ in.
Weight, machine and countershaft complete.....	435 lbs.

COUNTERSHAFT made for use with this machine has tight and loose pulleys 6 in. x 2¼ in. driving pulley, 12 in. x 2¼ in. drop of hanger, 8 in. It should run about 400 revolutions per minute.

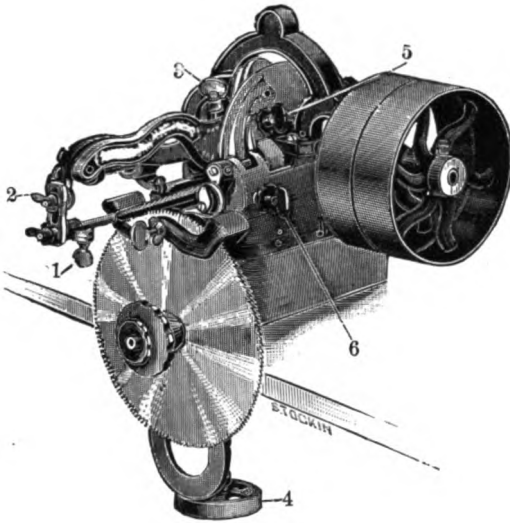
No. 1 Improved Tool Grinding Machine, complete with wheel, countershaft and truing device (Abreast).....\$87 50 without truing device (About).....\$80 00

No. 2 IMPROVED TOOL GRINDING MACHINE.

Emery wheel.....	20 in. x 2½ in. x 7 in.
Size of base	22 in. x 32 in.
Height from floor to center of spindle.....	36 in.
Diameter of spindle in bearing	1¼ in.
Size of pulley on spindle.....	6 in. x 3½ in.
Weight, machine and countershaft complete.....	760 lbs.

COUNTERSHAFT made for use with this machine has tight and loose pulleys 7 in. x 3¼ in. driving pulley, 14 in. x 3¼ in., drop of hanger, 10 in. It should run about 325 revolutions per minute.

No. 2 Improved Tool Grinding Machine, complete with wheel, countershaft and truing device (Abridge).....\$137 50 without truing device (Aborn).....\$120 00

METAL SAW FILER

No. 121. Circular Metal Saw Filer. \$35.00.
Weight, boxed, about 50 lbs. Code word, Metfile.

Our metal Saw Filer is designed specially for the requirements of electrotype or brass foundries, and will take saws from 4 to 16 inch diameter, with teeth not to exceed $\frac{1}{2}$ in. length, such as can be filed by an ordinary taper file, which files straight across the teeth.

The cone for saw will fit any sized arbor hole. The file descends on an angle and will give rather more hook on the teeth than is usually cut in new saws, if the file is canted with that object in view. The machine will keep saws perfectly round and in best condition for perfect sawing.

No. 229. Combination Tool Room Machine

This machine consists of a Combined Moulding Bit, Tool, Circular Saw, and Shimer Cutter Grinder. Just the thing for a tool room.

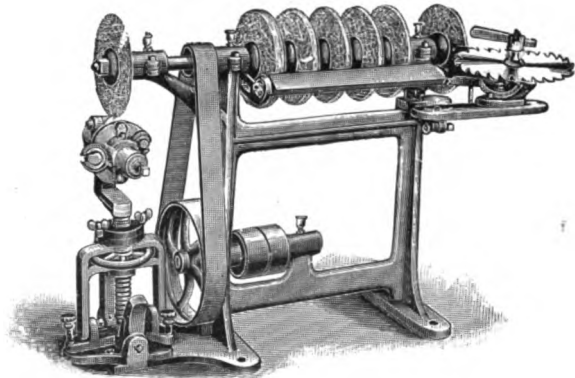
THE SHIMER HEAD GRINDING ATTACHMENT acts as a vise to hold the head while adjusting the cutters. It completes the work of sharpening, no files being used. There is nothing complicated about it, and it is quickly changed to any size of head or any angle or bevel on the knives. Not only does this machine do the work in much less time than it can be done by hand, but it keeps the cutters in good shape; the throats well cut out so as to give clearance for shavings, making the work easier on the head. This one attachment will pay for the machine in a short time in the item of time-saving alone.

THE SAW GUMMER AND SHARPENING ATTACHMENT is very effective. It can be used for jointing the saw, and simply keeps the teeth uniform, the hook and depth of all teeth the same, so that saws can be kept in first-class order with little trouble.

TOOL GRINDER.—The gang of emery wheels need no commendation. Every mill man knows how handy it is to have various shaped wheels always ready. The shape of the faces of these wheels can be varied to suit special uses without extra charge.

No. 229. Tool Grinder, Head Grinder, Saw Gummer.

Code word, Combine.



Tool Grinder with 5 wheels.....\$40 00
Saw Gunning Attachment.....10 00

Head Grinding Attachment.....\$15 00
Machine with all Attachments.....65 00
Head Grinder Alone.....35 00

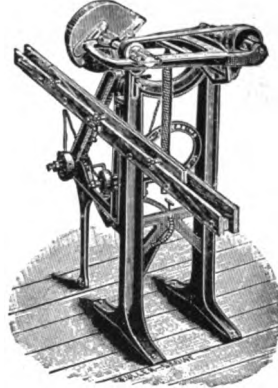
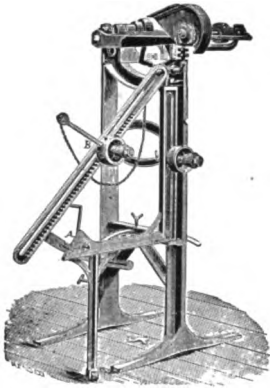
Approx. Weight
250 lbs.

Emery Wheels
8-in. diameter

Driving Pulley
4x2 $\frac{1}{4}$

Speed
500

10 Per Cent advance in price for boxing and delivery at New York for export



No. 231. O. K. Circular or Drag Saw Gummer. \$75.00.

Weight
450 lbs.

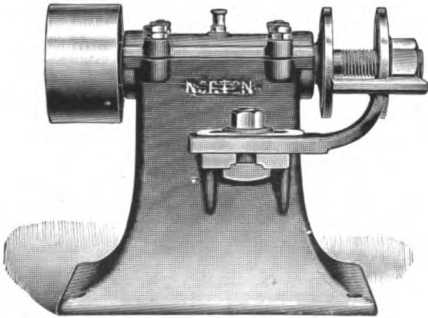
Drive Pulley
4-in.

Speed
1200

The upright iron frame one solid piece, 5 feet high. Capacity, circular rip saws, 6 to 72-inch cut-off or butting saw, 6 to 48 inch. Mulay, gang, drag or long crosscuts.

New Style Bench Saw Gummer

List price \$7.50. Code word, Gosling.



SPECIFICATIONS.

Weighs about 40 pounds.

Diameter of spindle between flanges, 1 inch.

Length of bearing, 6 inches.

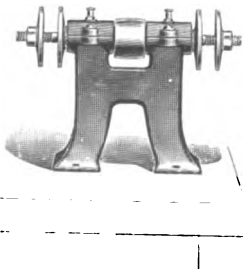
Size of pulley, $4\frac{1}{2} \times 2\frac{3}{8}$ inches.

Height from bench to center of spindle, $8\frac{1}{2}$

Designed for wheels up to 12 inch diameter,
 $1\frac{1}{2}$ inch thick.

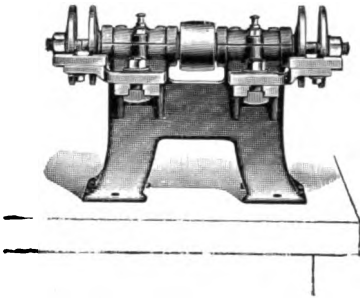
Bench space occupied, $9\frac{1}{8} \times 11\frac{3}{8}$ inches.

Bench Grinding Machinery



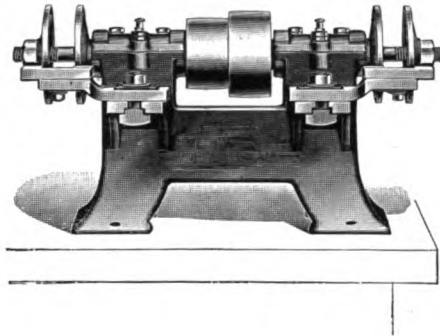
No. 95.

No. 95 for wheels $7 \times 1 \times \frac{1}{2}$ inch hole, \$7.50. Countershaft, \$10. Machine, 10 lbs. Countershaft, 45 lbs. Emery wheel extra. Pulley, $2 \times 1\frac{1}{2}$ inch. Speed of spindle, 3200.



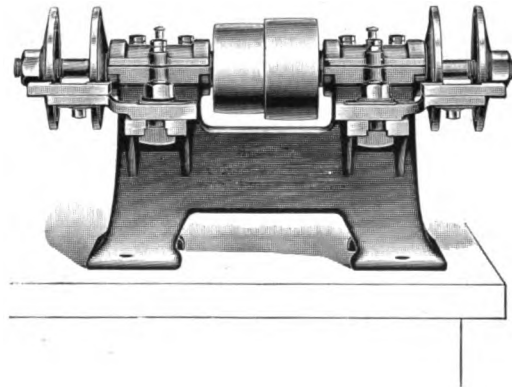
No. 95A.

No. 95A. For wheels $8 \times 1 \times \frac{5}{8}$ hole, \$10. Countershaft, \$10. Machine, 40 lbs. Countershaft, 55 lbs. Emery wheel extra. Pulley $2\frac{1}{2} \times 1\frac{3}{4}$ inches. Speed, 2400.



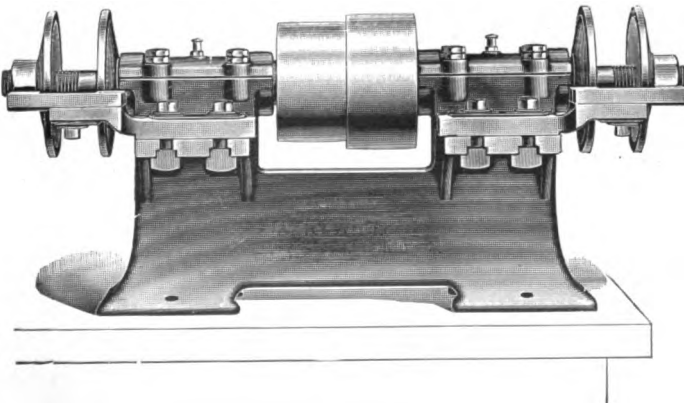
No. 96.

No. 96. For wheels $10 \times 1\frac{1}{2} \times \frac{3}{4}$ hole, \$13.50. Countershaft, \$13.50. Machine, 75 lbs. Countershaft, 100 lbs. Emery wheel extra. Pulley, $4\frac{3}{8} \times 3\frac{1}{2} \times 2\frac{1}{8}$. Slow speed, 1900.



No. 96A.

No. 96A. For wheels $12 \times 2 \times 1$ hole, \$25. Countershaft, \$13.50. Machine, 110 lbs. Countershaft, 100 lbs. Emery wheel extra. Pulleys $5 \times 4\frac{1}{2} \times 2\frac{5}{8}$. Slow speed, 1600.

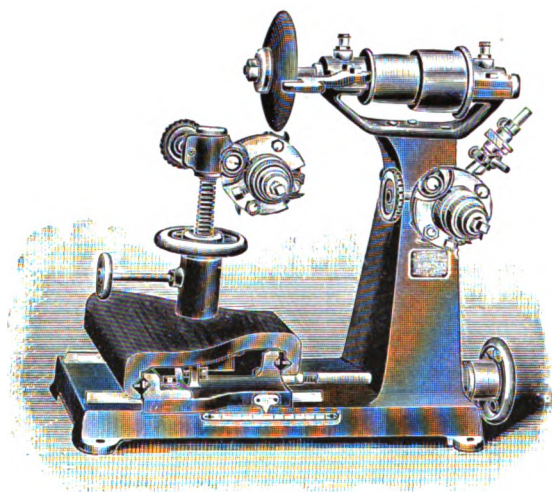


No. 97.

No. 97. For wheels $14 \times 2\frac{1}{2} \times 1\frac{1}{4}$, \$40. Countershaft, \$19. Machine, 175 lbs. Countershaft, 200 lbs. Emery wheel extra. Pulleys, $6\frac{1}{2} \times 5\frac{3}{4} \times 3\frac{1}{4}$. Slow speed, 1400.

A CUTTER HEAD GRINDER

With Tracking Attachment



We have in the past recommended the file for sharpening the Bits of the Shimer Cutter Heads, and we would repeat that for all around service the file, in fairly well trained hands, is thoroughly good.

There may be some mills where the almost constant service of a filer makes it necessary to procure more economical means by which the Bits of the Cutter Heads may be sharpened, and for such we are pleased to offer herewith the new Grinding Machine, with Patent Tracking Attachment.

The stub directly under the emery wheel is selected to suit the bore in the Head. The Head is slipped on, fastened with set screw, and raised or lowered by turning the hand wheel until the wheel passes clear of touching the head flange.

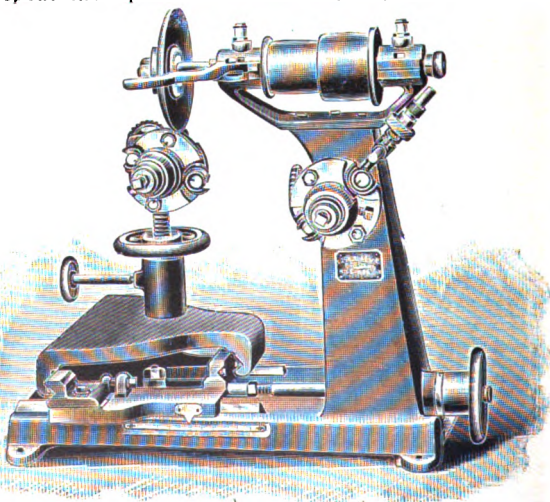
To get the proper hook to the bit, move the carriage laterally to the right or left, to the right for one Head, to the left for the other, and set carriage by means of the index pointer and scale on base plate.

To get the Angle of Shear, swing the Head around to suit and fasten set screw. Raise or lower the Head so as not to grind the flange of the Head. (The carriage is arranged to run on ball bearings, sensitive and light in operation. The Ball Bearings are covered and protected from dust and dirt. An adjustment is provided to take up wear when necessary.) Now push the Head and carriage slowly and carefully at first to the wheel and turn the Head so as to bring the Bit face against the wheel, a mere touch being sufficient to sharpen. Repeat the operation for all the Bits of the same series. Then remove the emery wheel and put the other side next to collar for the other series of Bits. Once the operator understands where to set the carriage to suit the Heads, the process will be found simple and complete.

After the grinding, then place the head upon the stub at side of machine frame, and set the Bits by means of the gauge or the Tracking Attachment, as provided.

A few sharpenings will give the operator confidence, and with each succeeding operation the time required for sharpening will be reduced to the minimum.

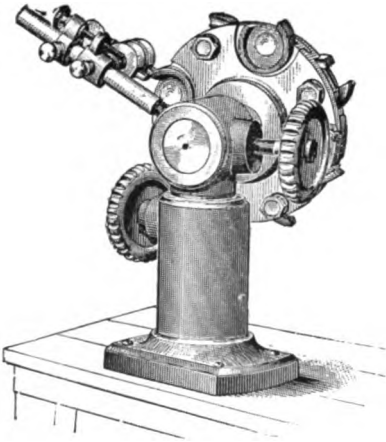
The two-step cone will provide for the wear of the wheel to give greater speed as it is reduced in diameter.



Weight of machine, about 300 pounds. Boxed for export, 350 pounds.

Price, complete machine with one emery wheel and countershaft (net).....\$80.00

With each machine one emery wheel, countershaft and wrenches are included. T. & L. pulleys are 6 in. in diameter, 3 inch face, and should run 375. Size of belt to countershaft $2\frac{3}{4}$ in.; from countershaft to machine $2\frac{1}{2}$ in.

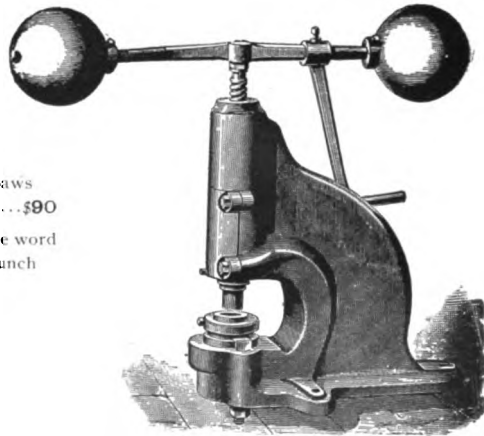
A NEW CUTTER HEAD FILING STAND**For the Bench****With Tracking Attachment by means of which the Bits are all set Quickly and Accurately**

This cut represents a new and improved Filing Stand, with Tracking Attachment. Ordinarily the gauge that accompanies each Shimer Cutter Head is all the instrument needed for doing the work, but in many instances, when the machine is waiting for the sharpening and re-setting of the Bits, workmen are apt to hurry, and as a result, the Bits are not set as closely as they should be. The Tracker above is a handy and convenient attachment to quickly bring the projection of the Bits to the same cutting circle.

The Head will do its best when the knives are set equidistant from the center, and the Tracking Attachment is intended to get that fine adjustment which is almost impossible to obtain by other methods.

Patented July 22, 1902.

Price, complete, with one Stub only, \$8.75. Extra Stubs, each, 75 Cents.

HAND SCREW PRESS**For Gumming Circular Saws or Punching Iron or Steel.**

No. 99 For Gumming Saws
up to 5 gauge.....\$90

Weight Boxed Code word
460 lbs 30x24x15 Punch

No. 100 For Gumming Saws
up to 8 gauge.....\$80

Weight Code word
250 lbs Puncher

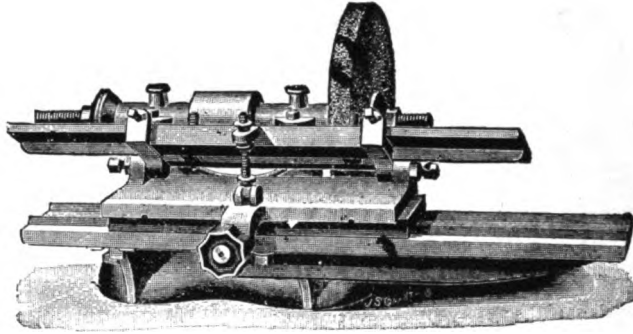
This Press is made in two sizes or weights, and of a style rendering it strong and durable for punching, slotting, toothing or shearing purposes.

The No. 99 Press weighs 460 lbs., and is adapted for gumming saws or punching steel up to 5 gauge (7-32 inch) in thickness.

The No. 100 Press weighs 250 lbs., and will gum saws up to 8 gauge (5-32 inch) in thickness.

Special dies and punches, or shear blades, will be furnished on order.

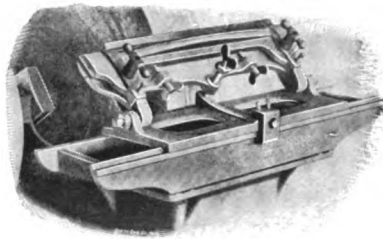
This is a very desirable and powerful machine, and we recommend it as superior. When ordering state the purpose for which the Press is intended, and always send templet with order to enable us to make the dies to suit requirement. The price for a set of dies cannot be guaranteed in advance, but is based on actual material and labor costs, and ranges from \$15 to \$30 per set. Ten per cent advance for boxing and delivery at New York for export.



No. 402. 24 Inch Combination Tool and Knife Grinder, \$32.00.

Boxed 13x13x36 Inch; Weight, 105 pounds.

This machine is designed for general use as a tool grinder, for which purpose one suitable rest is provided, not illustrated; or, for use in the hand grinding of planer knives, cutters, etc. The knife may be ground at any desired bevel and is moved to and fro by hand. With each machine is furnished, at price above, one 12x1 knife grinding wheel, and one rest. Will furnish additional wheels for any purpose at regular list and discount, if order specifies the diameter, thickness, shape of face and class of work. Drive pulley is 3x3 inch. Extras will be furnished as follows: Countershaft, \$10; moulding knife rest, \$2; saw gumming attachment, \$16. Countershaft has seven inch drop of hanger. T. & L. pulley, 5x3 inch; speed, 450, with a 10x3 inch drive pulley.



Knife Grinding Attachment for Grindstones.

No. 400—30 inch Hand Grinding Attachment.....	\$18 00	Code Word, Ogrindus	105 lbs.
No. 401—40 inch Hand Grinding Attachment.....	28 00	Code Word, Ogrindme	150 lbs.

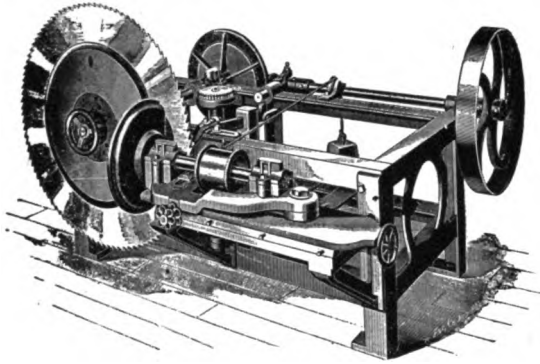
The device illustrated is designed for the hand grinding of planer knives or cutters upon a wet grindstone. It consists of a properly arranged carriage sliding upon a bed, which can be readily attached to any grindstone frame. The knife is clamped to the carriage, set to any bevel desired, and moved to and fro by hand, being guided by the planed ways. It is designed for shops having a limited amount of grinding, such that an inexpensive device is desirable.

CUP WHEELS.

We carry always in stock for our different Knife Grinding Machines a large assortment of Cup Wheels, made variously from emery, corundum, or carborundum, and for dry or wet grinding, and customers requiring additional wheels for their machines can obtain from us promptly wheels that in grain, grade, size and composition, through long and varied experience, are highly satisfactory and the best obtainable.

SHINGLE OR SEGMENT SAW GRINDERS

OBJECT—To save kerf by reducing the gauge of saw as it wears smaller



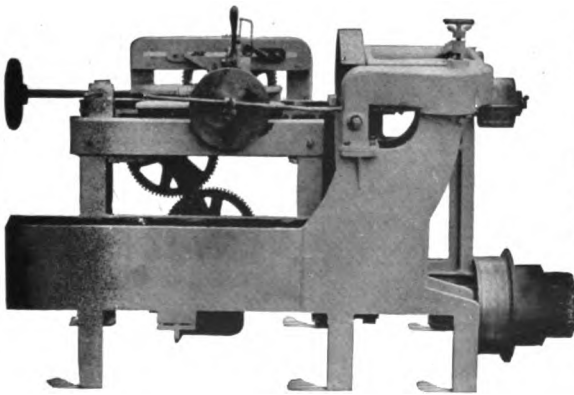
No. 178 Grinder for saws 24 to 38 inch diameter, \$200. 1250 lbs.
No. 178A Grinder for saws up to 52 inch diameter, \$225.
Approx weight, 1350 lbs. Boxed, 1700 lbs. 88 cu. ft.

The average thickness of a standard shingle with 16 gauge saw is but 11-32, therefore a saving on three kerfs in place of one.

Saw runs in water trough. Machine grinds, reverses and stops automatically when saw is ground to required gauge. Saw can be ground without removing collars. A most economical machine for use of shingle saw operators. Emery wheel 12x3/4 should run 1,200.

We can furnish any style of cone, or bushing, or collar, that may be required. Give diameter of hole in saw, and if saw has a collar, send sketch of same, showing thickness. Collars can be made specially to order when so required at fair prices. These Grinders have always proven satisfactory.

No. 257. Shingle Saw Grinder. (38 to 44 Inch Saw.)



Weight, 1500 lbs. Price, \$200

therefrom, a reciprocating carriage with adjustable dogs to set the length of carriage travel, and determine the width of zone or band to be ground on the saw. A saw arbor mounted on the carriage, a worm wheel on countershaft, a tangent gear on shaft connected by spur gears that are linked together to the saw arbor, a trough of water for the saw to run in when revolving against the emery grinding wheel. Such in brief are the general features of the saw grinder that nearly every Pacific coast mill and many eastern mills are receiving the benefit of today.

Foot treadle starts and stops saw revolving. Two adjustable dogs determine the length of travel of reciprocating saw or carriage, its motion being similar to that of the platen or table on bed of an iron planer. Saw revolves in a trough of water—is always kept cool. Saw revolves backward—no danger of injuring operator. Saw is loosely hung on arbor and held against emery wheel by an adjustable screw opposite wheel. Emery wheel automatically shifted to gauge taper of zone ground on saw by an adjustable form that may be filed to shape to suit the operator, grinding either straight or tapering. Wear of emery wheel adjustable.

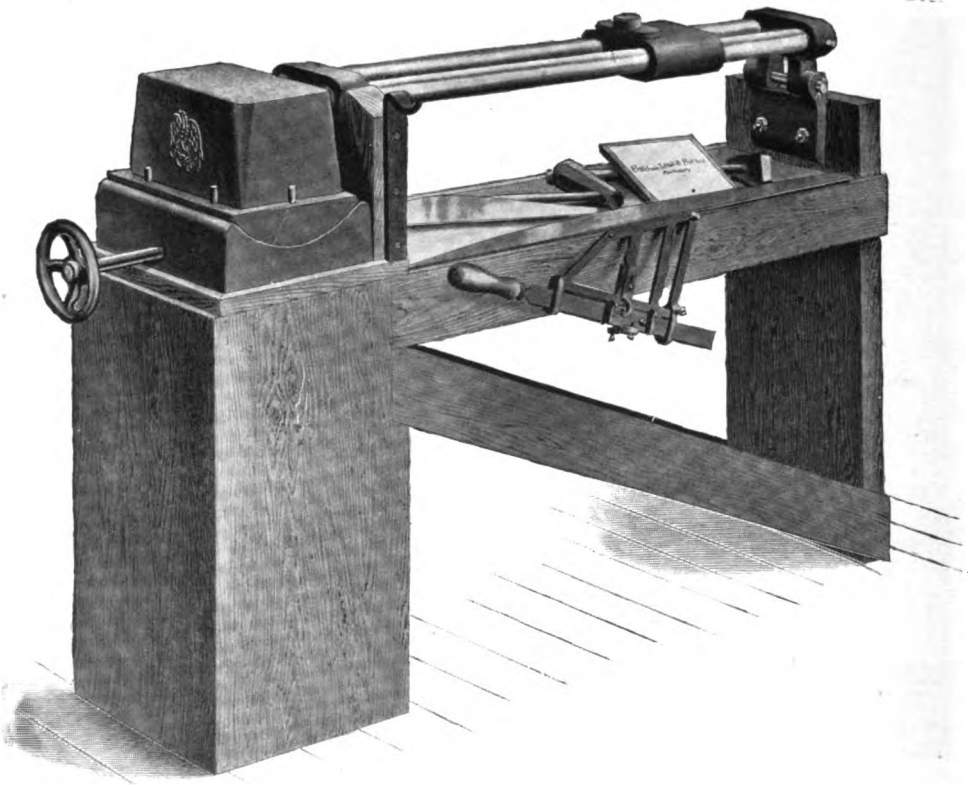
Shingle Saws are ground tapering. A saw 16 gauge at the rim, and 8 gauge at the eye, 38 inches in diameter, on a 22 inch collar, will be 15 gauge at 36 inches, and 14 gauge at 34 inches, or an average of 2 gauges on four inches of wear. It should saw five million shingles in this reduction.

Timber that will produce five million shingles with a 15 gauge saw set for 5-32 inch saw kerf (requiring 12-32 inch stock to a shingle), will make five million, four hundred and fifty-four thousand, five hundred and forty-five shingles, if sawed with a 16 gauge saw set at 4-32 inch (requiring 11-32 stock), or a saving of ninety thousand, nine hundred and nine shingles to the million, or a little over nine per cent.

Band saws have supplanted circular saws, saving on inch lumber. 16 gauge saw is but 11-32, there-

In this machine the saw is placed with flange toward the head in the saw arbor at the center of machine. Saw has a travel of 3 to 9 inches to or from emery wheel, so that the zone ground may be of any reasonable width. The depth of cut of emery wheel is gauged by thumb screw at right and top of machine. Everything protected from dust as much as possible. Machine is very perfect in all adjustments, and by reason of extreme weight does excellent work. It pays to keep your shingle saws ground thin.

Heavy iron frame, in which are journaled a countershaft, and emery wheel arbor driven



(Sold with unqualified warranty)

Bolton Circular Saw Hammering Bench.

No. 80 Bolton Circular Saw Hammering Bench.	No anvil or tools.	Price, \$25 00.	Hammered.
No. St Bench complete with Saw Tool Outfit.		" 50 00.	Hammering.
Approximate Weight of Bench, 200 lbs.		Approximate Weight of Complete Outfit, 325 lbs.	
	Floor Space, 14x60x36 high.		

10 Per Cent. Advance in Price for Boxing and Delivery at New York for Export.

Bolton Circular Saw Hammering Outfit.

Our Bolton Circular Saw Hammering Outfit includes everything for the bench (except the woodwork), 6x10 Steel Faced Fisher Anvil, Set of Straight Edges, 18 and 36 inch, or a Widemire Adjustable Gauge, pair of 3½ pound Hammers, doghead and cross-face, Rhodes' Sidedresser and Instruction Book on Circular Saw Hammering.

With this Hammering Bench no helper is required, and the operator can readily handle a 72 inch saw, hammering from rim to eye of saw in a circle, as the saw is kept in any position by center pin on carriage, and may be moved very easily. The saw can be hammered immediately across the eye by raising it off the carriage center and slipping it on anvil, thus enabling the operator to work on any part of the blade.

The saw may be swung on bench either by means of the hook on block near anvil, or by raising the carriage track to vertical position, engaging the mandrel hole with carriage center and then tipping the track back to a horizontal position. The carriage slide travels upon two parallel bars of 1½ inch steel, hinged at the rear end, to admit of being raised to a vertical position.

The saw anvil is mounted upon a cast iron block, the under face of which is the segment of a circle. This block is provided with a section of a worm gear (not seen in cut), which engages with a worm mounted on the hand wheel shaft. The hand wheel shaft and worm is mounted in another base casting, whose surface conforms to that of the upper block on which the anvil rests. If the surface of saw does not lie flat upon the anvil, the operator can instantly adapt the face of anvil to suit the saw plate, so that a solid blow can be struck by means of the hand wheel for tilting anvil.

If desired, the filer can hang the saw upon the hook, where it will balance more perfectly than if held by hand upon the floor, and in this position any part of the saw can be examined with straight edge. A set of pins driven in the timber supporting the anvil block will be useful when testing the saw in vertical position.

For an anvil of usual size, 6x10x5½ inches high, the anvil block should be mounted on a 10x12 timber about 26 inches high. There should be spiked to this timber a 2x10 plank enough higher than the timber to hold the saw supporting slide on a level with the face of anvil, when same is leveled. The rear support for the slide should be erected of suitable height and properly braced as shown in cut.

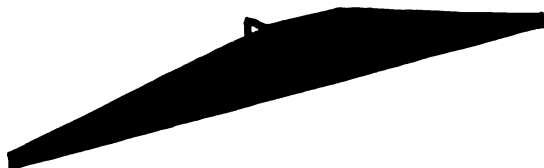
With this Hammering Bench, the necessary tools, and explicit directions covering every detail in saw hammering, any circular saw filer will be able to greatly improve the running of his saws.

Our equipment for this purpose cannot be surpassed.

Widemire Circular Tension Gauge.

We advise every circular saw hammerer to buy one of our Widemire Adjustable Tension Gauges. Regular sizes, 24 inches long, price \$5.00; longer or shorter sizes quoted on request. This gauge serves either as a straight edge or tension gauge, instantly adjustable for any speed. It is vastly preferable to the ordinary straight edge for securing perfect and uniform tension. Every user speaks in the highest praise of it, and the more expert the man the more does he value this gauge. We can guarantee it to please.

**Every Circular
Saw Filer and
Millman Needs a
Widemire Adjust-
able Straight
Edge and Tension
Gauge**



**Suitable for
Leveling or Ad-
justment of
Tension at any
Speed**

Write for descriptive circular. It will interest you.

Standard size, 24 inches long, for saws 44 to 64-inch diameter. Price, \$5 net cash, f. o. b. Grand Rapids, or by registered mail to points in the United States for \$5.40. Prepayment by mail or express or of duty at customer's cost. Weight, wrapped up, about 2 pounds; boxed, about 3 1-4 pounds.

Special sizes, 15, 18, 20, 22, 27, 30 or 33 inches long, will be made to order at price net \$6 f. o. b. Grand Rapids.

No practical man can afford to be without this gauge.

Recommended by and useful to expert circular filers. Invaluable for beginners. A good thing for saw shops or the mill filing room.

Adjustable for tension at any speed. Order a Widemire Gauge. You will like it.

A FEW TESTIMONIALS. We believe every user of this gauge would willingly give a testimonial for it on request. We have never solicited a testimonial for this tool, but many have been sent voluntarily, some of which we publish:

E. A. ROGERS, PELHAM, Ga.—I am still using your Widemire Gauge and find it the best thing I ever used for hammering high speed saws. I have been using it on saws near 1,000 revolutions per minute, and it gives the proper opening when saws are fitted to it.

BLACKWATER LUMBER CO., DAVIS, W. VA.—We consider the Adjustable Tension Gauge for circular saws the most practical device of the kind on the market.

J. D. GEBOTT, DAVIS, W. VA. (BEAVER CREEK LUMBER CO.)—As to your Adjustable Tension Gauge for circular saws, in my judgment it is the finest tool ever offered to the public for this purpose. I have watched your saws time and time again and have yet failed to ever see them make a crooked line or flutter in the guides, and standing extra heavy feed in frozen spruce, which I consider a very tough class of timber and hard to cut. Should I ever have occasion to again file circular saws in fast mills, I would certainly use your Gauge, as it is far superior to the ordinary way of testing for tension with the straight edge.

P. MOEGERLE, BEAVER FALLS, PA. (CHAMPION SAW AND GAS ENGINE CO.)—Having used your Adjustable Tension Gauge for Circular Saws, I can cheerfully say it is a good tool. It is especially good for mill men who run high speed saws and are not professional hammermen, as it enables them to determine very accurately how a saw should be hammered.

WILLIAM BAZILLION, TUSKET, NOVA SCOTIA.—I herewith enclose \$2 for your B. T. B. Book on Saws. Received your Tension Gauge all right—the best tool I ever had in the filing room.

J. A. HILL, PARISHVILLE, N. Y.—I find the gauge to fit the tension of my saws after setting to the fifth degree of gauge. I don't need any further trial to satisfy myself of its merits. It is a tool indispensable to filers of little experience.

R. H. MILFORD, SOUTH RIVER, ONT.—The Adjustable Tension Gauge I got from you last spring works first class. It cost me \$7.60 to get it here; that is, with the duty and express, but I would not be without it since I know the good of it—that is, I can do the work so much quicker. I believe in the use of a tension gauge for circular saws as well as for bands.

E. A. ROGERS, PELHAM, GA.—Some months ago I purchased a Widemire Adjustable Tension Gauge, and at first I never had confidence enough in it to use it, but we have a large saw that no filer could ever make go and I put this saw up with it and she stands right up to her work.

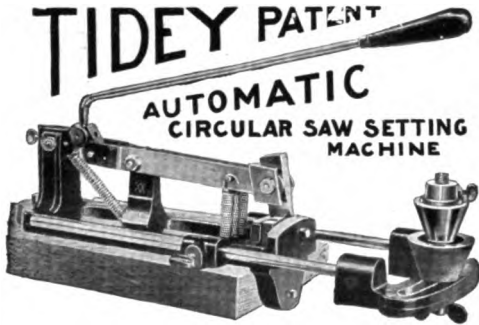
A. H. MILLER, LOGTOWN, MISS.—Please find enclosed \$2 for the B. T. & B. Manual on Saw Fitting. I am using one of your Tension Gauges ordered through the H. Weston Lumber Co., and I think it is the finest thing out. Please send book at once.

We make an immense line of Saw and Knife Fitting Machines and Filers' Saw Tools. Filers wanting Swages, Sidedressers, Shapers, Straight Edges, Tension Gauges, Hammers, Leveling Blocks, Upsets, Swage Bars, Anvils, Silver Solder, Brazine or general Filing Room Machinery, ought to write us.

No. 106B Trip Hammer Saw Set

Boxed f. o. b. Grand Rapids, \$25. 35 pounds

For Saws 5 to 30 Inch Diameter.



Cone A, centers saw; G, anvil; B, setting hammer. Operating lever extends upward at E; screw F regulates force of blow, i. e., determines height to which hammer is lifted. The three springs also regulate the force of blow; that is, machine can be operated with one, two or three springs. The farther the teeth are placed over anvil and the harder the blow, the greater the degree of set given. The blows are always alike and a uniform set results. A boy with this machine can do absolutely correct work.

The largest saw shop in the world employs 28 of these machines.

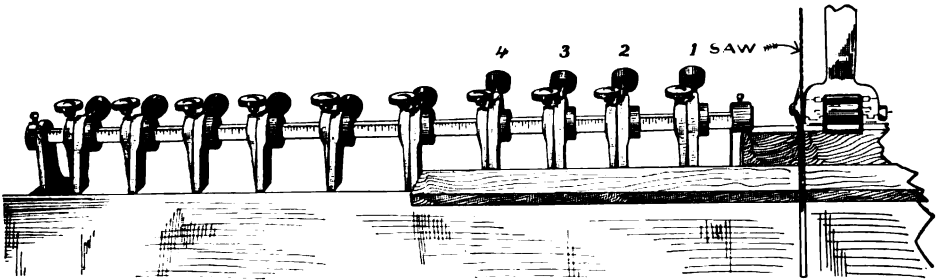
A Few Customers

Western Electric Co., New York
Siegel & Cooper, Chicago
Votey Organ Co., New York
Bradley, Currier & Co., New York
Baldwin Locomotive Wks., Philadelphia
Henry Disston & Sons, Philadelphia
Brill Car Co., Philadelphia
Sikes Chair Co., Philadelphia

Rathbone, Hair & Co., Chicago
Louis F. Nonast, Chicago
J. C. Wintermeyer, Chicago
Theodore Kundtz, Cleveland
American Box Co., Cleveland
Standard Oil Co., Cleveland
Widdicombe Furniture Co., Grand Rapids

John Widdicombe Co., Grand Rapids
G. R. Veneer Works, Grand Rapids
Michigan Chair Co., Grand Rapids
Hissell Carpet Sweeper Co., Grd. Rapids
Phoenix Furniture Co., Grand Rapids
New England Furniture Co., Grd. Rpd.
Fred Macey Co., Grand Rapids

Over 2,000 machines sold. An indispensable machine for every concern that wants the best type of saw manufactured.



The Tidey Patent Swing Saw Gauge

Saves time, material, and thereby money. Will save its cost many times over during the year. Not an expense, but an investment, yielding large returns. Any of the guesswork devices now in use will not avoid waste. Lumber costs money, and waste is money thrown away. The gauge permits of absolute adjustment of the lumber on the saw table, thus insuring against waste of lumber. Any number of lengths can be cut without having to change the stops, thus involving no waste of time. Stops operate automatically and do not require attention of the sawyer, thus giving him more time to guide the lumber carefully and increase the volume of work. Made of malleable iron, which will not break. Beware of fraudulent imitations and infringements made of cast iron.

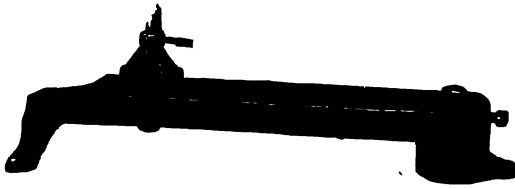
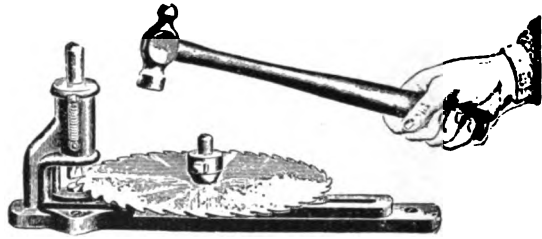
Price \$2.50 per foot and \$2.00 per stop

In use in nearly every woodworking factory in Grand Rapids, and in hundreds of others in other towns in the United States, Canada and England.

In ordering please designate whether the gauge is to be on the right or left hand side of the table facing the saw; also designate whether the gauge is to be marked in inches consecutively with a foot mark inserted at the end of each 12 inches, or whether it is to be marked in feet with the 12 inches repeated in each foot. Also state whether the saw is on the same end of the mandrel as that of the table which the gauge is to occupy.

Circular Saw Sets, Filing Vises and Guards.

No. 105-B Circular Saw Set,
 Price..... **\$8 00**
 Capacity, 30-inch.
 Weight, crated, 20 lbs.



No. 105 Circular Set for Saws up to 30
 inch diameter **\$8 00**

No. 105A Circular Set with Spring Set-
 ting Hammer **7 50**



No. 106 Circular Set for Saws up to 48-inch
 diameter **\$10 00**

$\frac{3}{4}$ Setting or Swaging Hammers,
 each **1 00**

No. 106A Circular Set for 72-inch Saws..... **13 00**

No. 107 Vise For Saws up to 20-inch diameter **8 00**

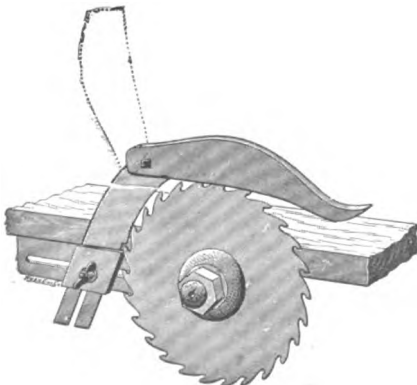
No. 108 Vise For Saws up to 50-inch diameter **10 00**

No. 108A For Saws up to 72-inch diameter . . **15 00**



Circular Filing Vise and Jointer
 (is vertical when erected.)

Our Filing Vise and Jointer is so useful and convenient that it should recommend itself to every user of circular saws. It is readily adapted to saws of any diameter or arbor line.



Bennett Reliable Saw Guard.

Easily Operated.

Prevents Accident.

Simplicity Itself.

Saw Will Not Pinch.

Perfectly Reliable.

No Flybacks.

Protect your saws with the only reliable Saw Guard. It saves time, is operated with one thumb screw, is adjustable all ways, is made of the best malleable iron and steel, is thoroughly reliable and will last forever. It is in daily use in the leading furniture factories in Grand Rapids, Michigan, and many other cities.

Bennett Reliable Saw Guard.

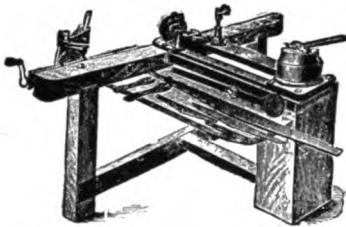
R. H. or L. H. Cut shows R. H. Guard.

No. 118 Guard for saws 6 to 12 in. diam., **\$3 50** Weight 3 lbs.

No. 119 " " " 10 to 16 " **3 75** " 5 "

No. 120 " " " 12 to 24 " **4 00** " 6 "

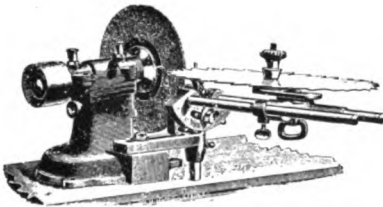
Filers Saw Tools



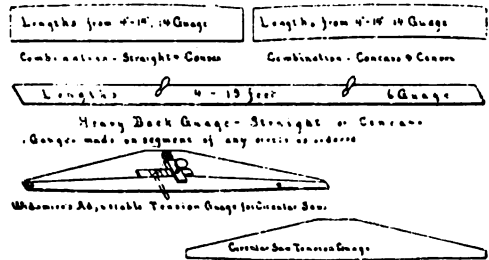
Covel Circular Saw Hammering Bench Outfit \$50.00



Saw Mandrels to Order



Bench Saw Gummer



Straight edges and Tension Gauges for any purpose. Made to order any gauge, width, length, straight, convex or concave to segment desired. Every filer or filing room needs a full set.

Filers' Saw Tools.



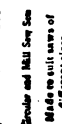
6 lbs. No. 72 B.C. 3/8" Square Jaw Hammer. \$4.00
Guides from flange by two idlers.



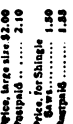
No. 725 Log Band Saw File. Price \$2.50 Postpaid \$2.75



Square Wheel Dresser. Will true heavy wheels, cutting at full speed. Price, with cutters \$2.15 Postpaid \$2.30
Price of extra cutters, per set 25¢ Postpaid 25¢



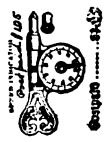
Circular and Mill Saw Set. Made to suit saws of different sizes.



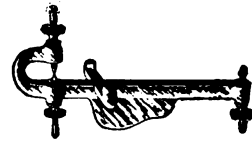
Price, for Shingle. Large size \$2.00 Postpaid \$2.10
Price, for Shingle. Small size \$1.50 Postpaid \$1.60



No. 31 Rhodes Circular Saw Drill. 10 lbs. \$10.00
See advertisement for Rhodes Saw Drill in capable of drilling 1/2" holes in cast iron.



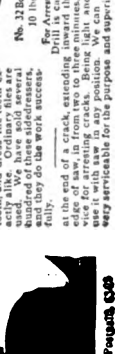
No. 170 Saw File. Price \$1.00 Postpaid \$1.10



No. 171 Circular Saw Dressing Machine. Price \$1.50 Postpaid \$1.60



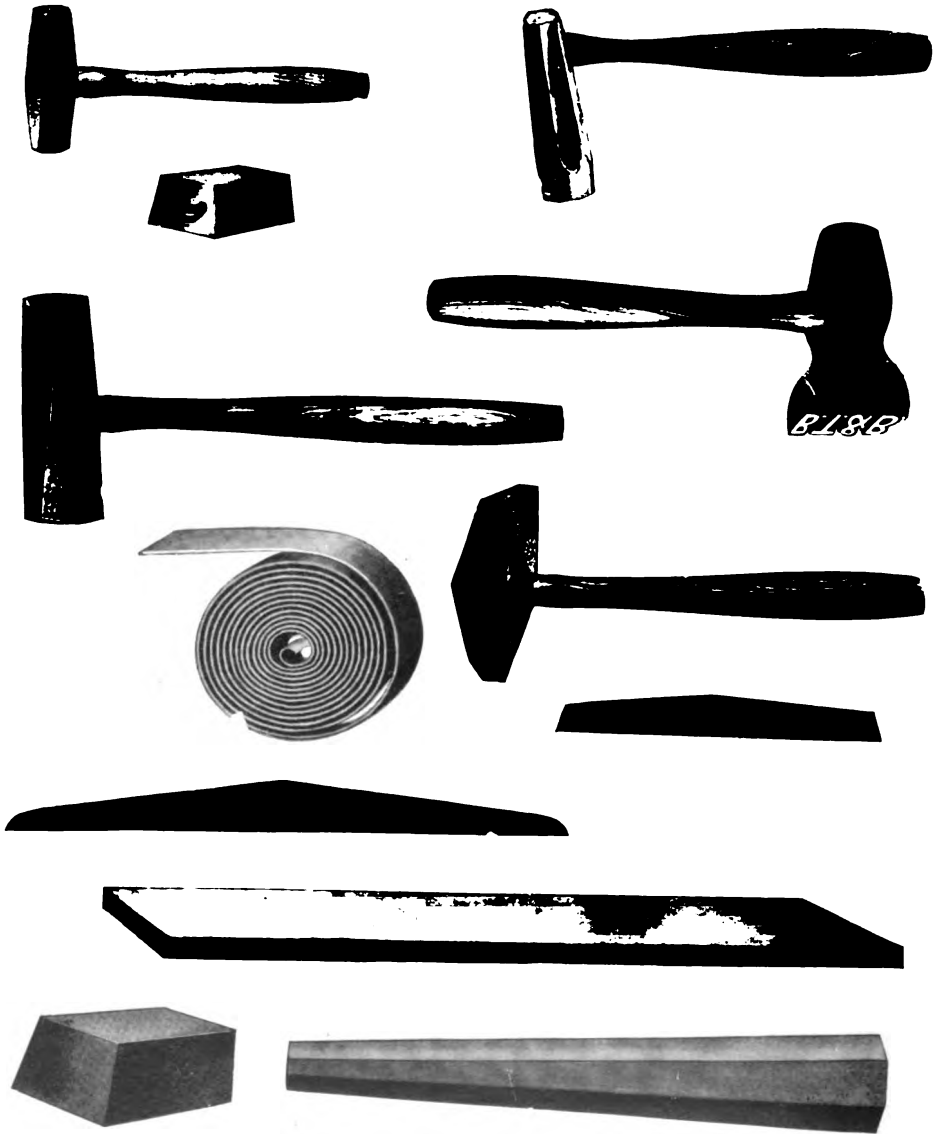
No. 174 Circular Saw Dressing Machine. Price \$1.00 Postpaid \$1.10



No. 175 Circular Saw Dressing Machine. Price \$1.00 Postpaid \$1.10

Saw Tools Made to Order

(The Finest Manufactured)



Always specify B., T. & B. Hammers, Anvils, Straight Edges, Tension Gauges, Leveling Blocks, Upsets, Swage Bars, Side Files, Jointers, Sawsets, Set Gauges, Marking Stamps, Emery Dressers, Saw Gauges, Speed Indicators, etc. We furnish tension gauges, convex or concave, on segment of any desired circle, back gauges straight one edge, concave to order on other edge; leveling blocks, any thickness, width or length. Hammers to order, any weight, style or grind. B., T. & B. Silver Solder never reported unsatisfactory. Buyers of Brazine repeat their orders. The best saw tools are the cheapest to buy. We have them.

The B. T. & B. Newly Revised 144 Page Manual on Saw and Knife Fitting, by Mail, Post Paid on Receipt of \$2.00

**F. O. B. Grand Rapids. No filing room complete without an outfit.
Remit by Draft, Money Order, Cash or Postage.**

Best Hand Forged Steel Saw Hammers

Finely ground and polished; mounted with handle; made to order any style; in weight from one to ten pounds. Regular styles are Doghead, Cross Face, Twist Face, Combination and Swaging Hammers. Add 25 cents each for nickel plating, and 25 cents each for etching name. Circular, Band or Gang Saw Hammers. Doghead or Cross Face per pair, **\$5.00**. Light Finishing Band Saw Hammers per pair, **\$5.00**. Band Resaw Hammers per pair, **\$5.00**. Single Hammers of any style furnished as follows:

2 2/4" or 3 lb at.....	\$2 50	5 lb at.....	\$3 50	7 lb at.....	\$4 50
3 1/4 lb at.....	2 75	6 lb at.....	4 00	8 lb at.....	5 00
4 lb at.....	3 00				

**Straight edges from 4 to 120 inches long. 10c per inch or \$1.00 per foot.
Tension gauges, 6-in. 75c; 8-in. \$1.00; 10-in. \$1.25; 12-in. \$1.50; 14-in. \$1.75.
Band Saw Back Gauges, 4 to 10 ft. long, straight or concave at \$1.00 per foot.
Band Resaw Back Gauges, straight or concave, at \$1.00 per foot.**

(On the segment of any desired circle.)

Combination Straight Edge and Convexension Levels

12 " " 1 90 8 " " 1 90 4 " " 1 40

Surfaced both sides.		Made to order any thickness or face.	
12x48x3....	\$25 00	12x60x3....	\$30 00
6x48x3....	12 00	12x72x3....	\$35 00
		8x48x3, at	\$15 00.
		Larger sizes pro rata	

Face, 8x 5	Height, 5 1/2	Weight about 60	pounds	Per pound \$	12
" 10x 6	" 5 1/4	" 88	"	"	13
" 12x 8	" 6 1/4	" 165	"	"	12
" 10x 14	" 8	" 300	"	"	35
" 10x 12	" 7 1/4	" 250	"	"	28
" 12x 14	" 8	" 375	"	"	46
" 10x 16	" 8	" 360	"	"	43
" 12x 16	" 8	" 450	"	"	50

x 8	Face about 60 lbs at 12c per pound	10x12	Face Band Saw Anvil about 160 lbs. at \$16 00
x 8	" " 78 " 12c " "	10x14	" " " " 185 lbs. at 18 50
x10	" " 82 " 12c " "	12x16	" " " " 270 lbs. at 27 00

Conqueror No. 0 for Large Circulars.....	\$3 50	Conqueror No. 1 for Large Circulars.....	\$1 00
" " 2 " Small ".....	2 50	" " 3 " Small ".....	2 00
" " 00 " Large ".....	4 00	" " Band for Band Saws.....	2 50
No. 3—Mixer Swage, largest size for saws of from 5 to 10 guage.....	\$5 25		
" " 2 " medium ".....	4 50		
" " 1 " " for all thinner guages.....	3 75		
" " 0 " " small thin saw.....	3 00		

Swaging Hammers, net. each		1/2-in. \$1.00; 3/4-in. \$1.25; 1-in. \$1.50.	
No. 1—Bar, 8 or 6 sided, 11x1x 1/2 inch	\$2 50	No. 3—Bar, 8 or 6 sided, 11x1 1/2 x 1/2 inch	\$3 50
2— " 8 or 6 " 11x1x 1/2 " "	3 00	4— " 8 or 6 " 11x1 1/2 x 1/2 " "	4 00

The perfect brazing of band saws depends largely upon the silver solder. Quality is far more important than price. No good results can be had from the use of cheap, brittle solder. Our solder is the finest obtainable for brazing tempered band saw steel. Regular sizes of solder in stock being $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, 1 and 1 $\frac{1}{2}$ inch. Per oz., \$1.25, 6 oz. or more, \$1.00 per oz. We advise use of 1 $\frac{1}{2}$ inch solder for patch brazing in connection with the Bolton Patch machine.

Cutters for Bolton Lap Cutting Machine, each \$1.50. Cutters for Bolton Patch Machine, each \$2.50
Patch Strips for Bolton Patch Machine any guage or length to 3 inches at 25c each. Anti-Friction
Washers for Saw Stretchers, \$10.00.

Size 2-16 inch letter, 25c. Per Alphabet, \$4.50. Figures per set, \$1.50.
Size 5-16 inch letter, 35c. Per Alphabet, \$7.50. Figures per set, \$2.50.
Size $\frac{1}{4}$ inch letter 30c. Per Alphabet, \$6.00. Figures per set, \$2.00
Size $\frac{1}{8}$ inch letter, 45c. Per Alphabet \$9.00. Figures per set, \$3.00.
Steel and forging extra at 50c per pound.

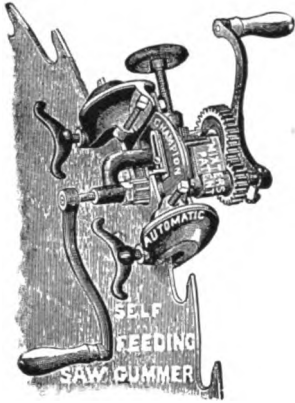
$\frac{1}{4}$ inch letter, 75c. 1 inch letter, \$1.00. $1\frac{1}{4}$ inch letter, \$1.25. $1\frac{1}{2}$ inch letter, \$1.50 Forging and steel extra 50c per pound.

1/2 oz. sample bottle in mailing tube, postpaid, 44c; 4 oz. bottle in mailing tube postpaid, \$2.13. Commercially pure muriatic acid, \$1.00 per pound

We supply repairs for any make of swage or shaper.

Mixer's Celebrated Champion Saw Gummers.

With Patent Automatic Self-Feed.



No. 111. The Mixer Patent Automatic Self-Feeding Champion Gummer, including three cutters (usual size, $\frac{3}{4}$, $\frac{1}{2}$ and 1 inch), grinder and wrench. Price, \$20.00 net.

No. 112. Small size Patent Automatic Self-Feeding Champion Gummer, especially adapted for crosscut saws and small and medium circular saws, including three cutters ($\frac{3}{4}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch), grinder and wrench. Price, \$17.50 net.

Extra Arbors for $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{5}{8}$ inch cutter for Mixer's Champion Gummers, \$2.00 net.

Extra Arbor for $\frac{3}{4}$ inch cutter for Mixer's small size Champion Gummers, \$1.50 net.

Full directions sent with each machine.

The engraving represents Mixer's Famous Champion Gummer, with Patent Adjustable Self-Feed. It can be regulated at will to feed faster or slower, according to the work to be performed, and can be changed in an instant from self-feeding to hand-feeding.

It is self-acting, throwing itself out of gear when the teeth are cut to the required depth, making them of uniform length.

The Champion has the lateral or oscillating movement of the cutter, and is fully adjustable to all kinds of saws, from the largest circular to the smallest in general use; also mill and crosscut saws. The line of teeth can be cut at any angle desired, from horizontal to perpendicular. It cuts very rapidly and with no risk of bending, breaking or case-hardening the saw.

The Mixer Gummer is King.

Mixer's XX Cutters Price List.

Size..	$\frac{3}{8}$ in.	$\frac{1}{2}$ in.	$\frac{5}{8}$ in.	$\frac{3}{4}$ in.	$\frac{7}{8}$ in.	1 in.	1 $\frac{1}{8}$ in.	1 $\frac{1}{4}$ in.	1 $\frac{1}{2}$ in.	1 $\frac{3}{4}$ in.
Each.	\$0.50	\$0.50	\$0.50	\$0.60	\$0.70	\$0.80	\$0.90	\$1.00	\$1.25	\$1.75

In ordering cutters, be sure to give size of hole, as well as size of cutter required, or you can send us an impression of one end of the cutter on paper.

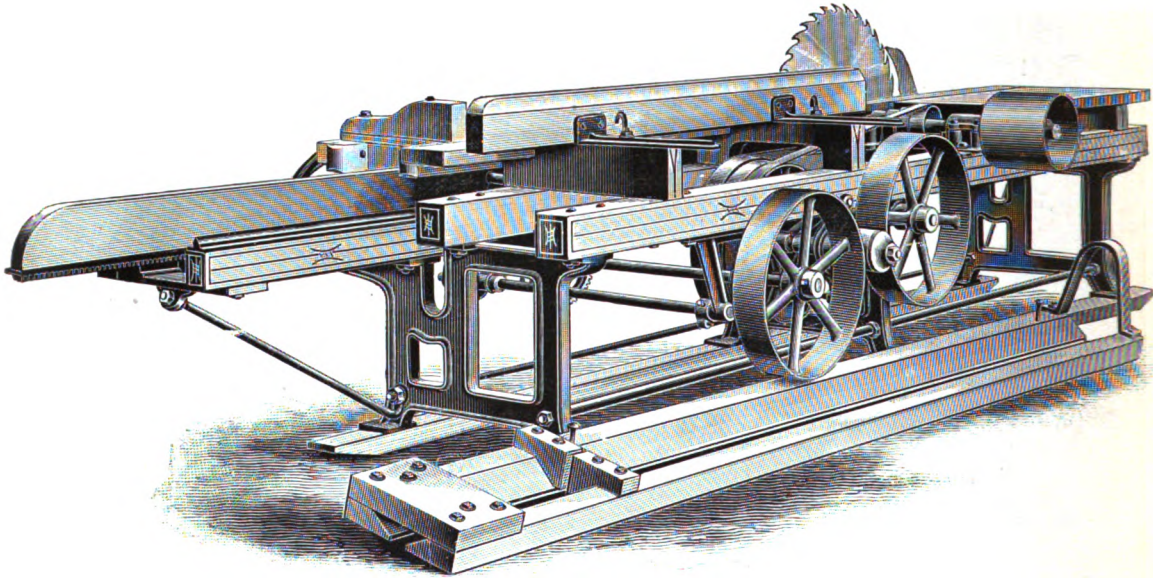
No cutters genuine unless stamped "MIXTER'S XX."

Mixer's Duplex Swages.

With Improved Patent Guides.



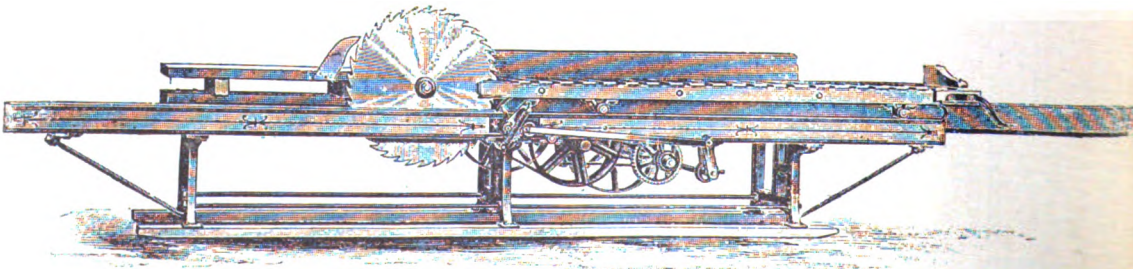
No. 3.	Duplex Swage, largest size, for saws of from 5 to 10 gauge.....	Price, \$5.25
No. 2.	Duplex Swage, medium size, for saws of from 8 to 12 gauge.....	" 4.50
No. 1.	Duplex Swage, for all thinner gauges.....	" 3.75
No. 0.	Duplex Swage, for small, thin saws.....	" 3.00

B. T. & B. Friction-Feed Self-Trip Bolting and Slat Saw Mill**A General Utility Saw for the Farm, Plantation or Mill****Bolting Mill, showing Attachment for Splitting Round Fence Posts, Bolts, etc.****No. 235A.****Bolter or Slat Mill, 30 in. saw, 6 ft. carriage, 3000 to 5000 capacity, 1500 lbs.....\$135.00****No. 235B.****Mill, 36 in. saw, 8 ft. carriage, 3000 to 5000 capacity, 1750 lbs..... 145.00**
Post or Bolt Splitting Attachment for either size mill, extra, \$15.**Painesville, Ohio, March 9, 1900.**

Please to ship us as quickly as possible, another 8-ft. Mill, same as last sent us, with one saw, same as sent previously. Don't forget to put on the box on the end of arbor, outside of belt pulley, same as our former rig.

Please to advise by return mail how soon you will ship. This makes four of these mills we have bought of you, and you ought to be able, after awhile, to give us a special discount, on account of being good customers, if for nothing else.

Yours very truly,

THE ROBISON BASKET CO.**Bolting Mill, Six-foot Car, showing Automatic Self-Trip.**

B. T. & B. Bolting Mill

This machine is specially adapted for resawing square timbers and planks into dimension stuff or sawing small logs. It has an iron frame and heavy steel arbor, iron track planed true and smooth, rack feed, adjustable fence gauge, powerful return feed and will carry a saw 30 or 36 inch diameter. It is ordinarily furnished with a self trip, adjustable to cut any length up to 6 or 8 ft., according to size of mill, which keeps the car in motion and requires no attention from the operators, leaving all their time to feed the mill and carry away the stuff.

This is the most complete and efficient machine on the market for cutting out slats, pickets, handles and similar small stuff. The splitting attachment shown in above cut is not furnished except on special order, it being designed for splitting fence posts, bolts, etc.

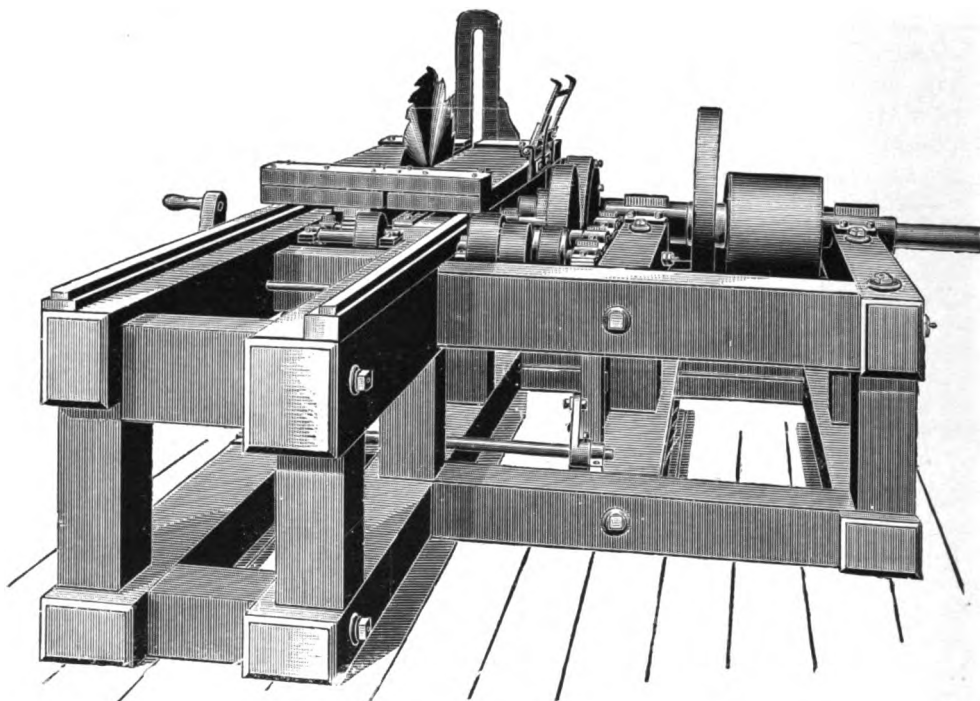
Outside boxes not shown on above cut are provided with these machines. The power required is from 10 to 15 horse, according to size of saw and logs. The capacity depends upon the power and skill used, usually from 3,000 to 5,000 per day of plank or timber cut into dimension stuff.

The splitting attachment is designed only for cutting through the center of log and it is not necessary to hold the log when being split. If the machine is used for ripping up a log, the log must be held in place when cutting the first slab. The gauge is readily adjusted and it takes but a moment to readjust it for varying widths. The maximum size log for which the mill with 36 in. saw is recommended is about 15 inch diameter. On special order the mill can be equipped with a foot instead of a hand trip, although the latter is rather more convenient, as the operator can simply touch the lever with his hand and move the carriage backward or forward at his pleasure. The trip can be set to work the carriage automatically full or partial stroke as desired, or the self trip may be disconnected and the machine run as a hand trip. The friction feed consists of a paper pulley running against iron pulleys. When used with a hand lever, the simple pulling of the lever puts the trip in gear and by releasing it stops the carriage. By shifting the lever to the other side, reverses the machine and if the machine is run automatic, it trips itself when the carriage goes the required distance.

The saw arbor is 1 15-16 steel with three bearings, the hole in saw 1½ inch and a ½ inch hole is punched to fit the pin. The pulley regularly supplied on saw arbor is 10 inches in diameter, 9 inches face, speed 1,000 to 1,200. The mill is 2 feet high and from the floor to top of carriage is 2½ feet. The floor space required is 21½x4 ft. 7 in.

The mill is made only R. H. as illustrated. The bolting mills are capable of taking care of timber the length of the frame, thus a 6-foot mill will handle 6-foot timber, etc. With each mill one saw is supplied. These mills are admirably adapted to the requirements of stave and heading concerns or to the getting out of dimension stuff. Is the best machine in the market for all ripping, splitting or re-sawing of stock fairly within its capacity. It is not, however, a saw mill or an edger and should not be ordered for work required of such machines. When required, a saw up to 36-in. diameter on the 6-ft. mill, and up to 40-in. diameter on the 8-ft. mill can be used and will be supplied at the extra price for same. For long stock the mill is usually run as a hand trip machine, the planks or bolts being fed part way by hand. The mill travels as fast as the saw can cut and the return is twice the speed. Floor space of 6-ft. mill 4 x 22 feet. For handling long stock we do not recommend the self-trip machine, because the operator does not have time to push up the next cut before the automatic trip would start on the return motion.

In such case the hand trip is preferable, because simply touching the lever will put the machine in operation. These machines give perfect satisfaction.

Smith Power Feed Bolting Saw Machine

The above cut represents our Latest Improved Smith Power Feed Bolting Saw Machine (for both handle and spoke timber), which has a 12-inch frame with 6-inch table.

We build these machines of any desired size to cut from 3-foot to 12-foot lengths, either side or center cut. The side cut is used for sawing handle timber.

The machine is built of 6 x 8 inch seasoned timber, except the sill next to the saw cheek, which receives the greatest strain from the saw, is made of 8 x 8 seasoned timber.

The frame is mortised and tenoned and bolted with joint bolts and rods, which makes it thoroughly rigid and substantial.

The arbor is of 3-inch steel with welded collar, which prevents any possibility of the saw loosening or giving. It has a large fly wheel turned and balanced, and a driving pulley 20 inches diameter and 12 inches face. The arbor rests in three 10-inch heavy cast boxes, well babbitted, giving it 30 inches of solid bearings.

It has the best power friction feed with a cone pulley, giving 3 feeds and a quick return (3 to 1 of the feed.)

The table is of 2-inch oak, either double or single, or both, and covered with heavy sheet steel. It is gibbed to an iron track running the length of the frame, planed and dressed V shape, which makes it run true and accurate.

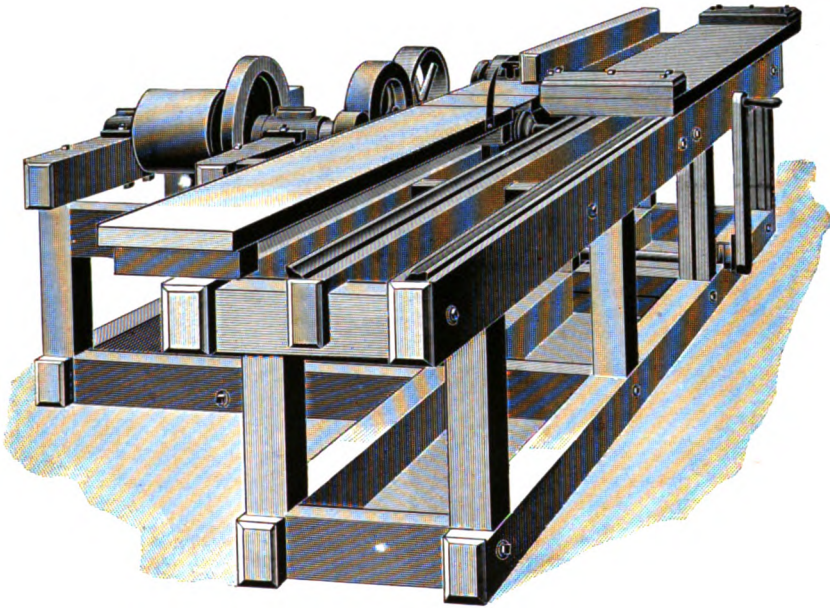
There is an adjustable gauge on the table to regulate a uniform width in sawing.

Ahead of the cut of the saw, under the table, is an iron roller which supports the table and prevents it giving down when sawing heavy timber. This table will swing a 54-inch saw which is steadied by an adjustable guide in front.

This machine is sold under an absolute guarantee.

No. 1, 6 ft. cut.....	\$170.00.	Shipping weight 2800 lbs.
No. 2, 8 ft. cut.....	180.00.	Shipping weight 3000 lbs.
No. 3, 10 ft. cut.....	200.00.	Shipping weight 3300 lbs.
No. 4, 12 ft. cut.....	220.00.	Shipping weight 3500 lbs.

We supply no saw with these mills except on regular order at standard price.
State size of saw and length of cut wanted.

Smith Automatic Rip Saw Machine

The above cut represents our Smith Automatic Rip Saw Machine for ripping cut stock for spokes, felloes, palings, tapered whip stocks and cradle fingers, etc., after the timber has been quartered or put into planks.

This machine has an eight foot frame, with four foot table, made from 4 x 6 inch seasoned timbers.

The frame is mortised and tenoned and bolted with joint bolts and rods which make it thoroughly rigid and substantial.

The Arbor is 2-inch steel with welded collar, which prevents any possibility of the saw loosening or giving. It has a fly wheel, turned and balanced, and a driving pulley 12-inch diameter, 8-inch face. The arbor rest is three 7-inch heavy cast boxes, well babbitted.

It has the best Power Friction Feed with a cone pulley giving two feeds and a quick return (3 to 1 of the feed.)

The table is of 2-inch oak, either double or single, or both, and covered with heavy sheet steel. It is gibbed to a cast iron double track running the entire length of the frame, planed and dressed V shaped, which makes it run true and accurate.

There is an adjustable gauge on the table to regulate a uniform width in sawing.

This machine will swing a 28-inch saw and is built in any size to cut from 3 to 9-foot lengths, either side or center cut.

This machine is sold under an absolute guarantee.

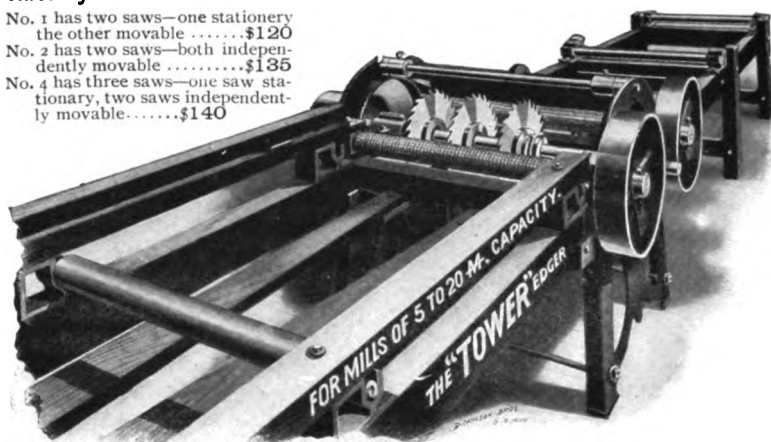
No. 1, 3 ft. cut.....	\$ 80.00.	Shipping weight 1800 lbs.
No. 2, 6 ft. cut.....	100.00.	Shipping weight 2000 lbs.
No. 3, 9 ft. cut.....	115.00.	Shipping weight 2200 lbs.

Saw will be furnished if ordered at manufacturer's price.

State size of saw and length of cut wanted.

Three Styles as Follows:

- No. 1 has two saws—one stationary the other movable\$120
 No. 2 has two saws—both independently movable\$135
 No. 4 has three saws—one saw stationary, two saws independently movable.....\$140

THE "TOWER" 2 AND 3-SAW EDGERS (Improved)

**The Only Edgers
on the Market Especially
Designed for Mills Cutting
Not to Exceed
20,000 Feet in
Ten Hours.**

**Over One
Thousand in
Daily Use.**

A combination of parts, every one of which has been demonstrated by many years of actual experience to be peculiarly suited to the purpose it serves.

These edgers are admirably adapted for small mills for the following reasons:

1. **They take up little room.** 2. **They require little power.** 3. **They are cheap.**

At the same time they are strong and thoroughly practical, fulfilling every requirement, as is amply evidenced by the large number of them in use.

Why pay twice as much for an edger requiring double the power and floor space, and doing no better work?

The following features contribute to the excellence of these celebrated edgers:

1. The shifting mechanism is up-to-date, convenient and positive.
2. The feed rolls are adjustable in four directions, which means extreme accuracy.
3. The saws may be removed easily and quickly without disturbing the arbor.
4. The saw arbor is provided with a steel feather key throughout its entire length.

This does away with small individual keys for the different collars.

5. The vital parts are carried by a substantial iron husk, resting solidly on the floor.

NOTICE.

Of the one thousand of these edgers in use, not twenty-five are provided with front pressure rolls.

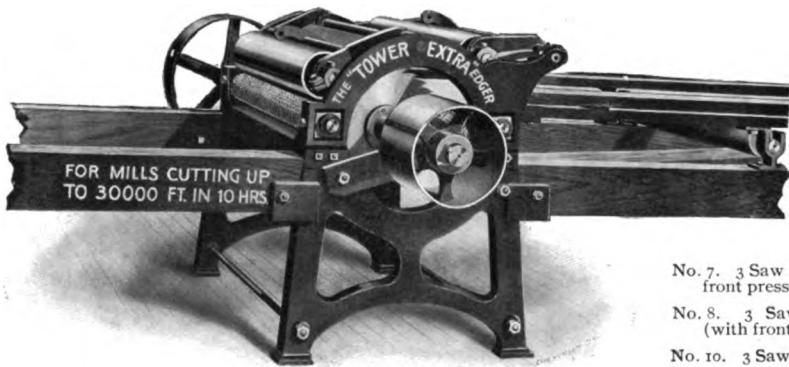
With a small edger like these, no front pressure roll is required. If the saws are kept in proper condition the lumber will go through perfectly straight without it, while if they are NOT in proper condition, a front pressure roll is of no avail.

At the same time, we can, if desired, provide these edgers with a front pressure roll hung in the most approved manner, at a reasonable advance.

Length over all, 23 ft. Greatest width over all (over saw mandrel), 54 inches. Width between guides, 32 inches. Shipping weight complete, 1,470 pounds. Driving Pulley, 10 inches diameter by 8 inches face. Speed, 1,500 to 1,700 revolutions per minute. Feed Pulleys, 18 inches diameter x 3 inches face. Saws, 14 inches x 10 gauge. The Saw Arbor is of cold roll steel, 1 15-16 inches in diameter. The Feed Rolls are so fluted as to be most effective without defacing the lumber. The Saws are shifted by means of strong levers, conveniently located, fully protected from the dust, and so arranged as to provide against lost motion and consequent inaccuracy. The Saw Collars are accurately fitted and have long bearings. The Table Rolls are of wrought iron, with steel journals.

If you wish an Edger, please answer the following questions:

1. Do you want Edger No. 1, 2, or 4?
2. As you stand in front of Edger, facing it, do you want the dividing pulley on the right or the left-hand side?
3. Standing as above, do you wish the stationary saw to be on the right or the left? (It is almost invariably put on the same side as the driving pulley.)
4. To the guide nearest the stationary saw a 2 inch or a 4 inch wing is hinged, which is turned up or down to increase or decrease the distance to the stationary saw. Which width do you prefer?
5. How much space do you wish between the stationary saw and the guide (not the WING), on the table? (Note—As the tight collar is secured by means of a set screw, its position on the arbor can readily be changed.)
6. What is the capacity of your mill in ten hours?
7. Do you cut hard or soft wood?



The "Tower Extra" 3-Saw Edger.

For Mills Cutting up to 30,000 Feet in Ten Hours.

No. 7.	3 Saw Extra Edger (no front pressure roll).....	\$170
No. 8.	3 Saw Extra Edger (with front pressure roll)	195
No. 10.	3 Saw Extra Edger..	220

Among the reasons for the great popularity of these celebrated edgers are the following:

1. They take up little room.
2. They require little power.
3. The mechanism for shifting the saws is up-to-date, convenient and positive.
4. The feed rolls are adjustable in FOUR directions, which means absolute accuracy.
5. The saws may be removed easily and quickly, without disturbing the arbor.
6. The vital parts are carried by a substantial iron husk resting solidly on the floor.
7. They are pre-eminently practical.
8. There is no edger of the same capacity made approaching them in cheapness.

These edgers are a combination of parts each and every one of which has been demonstrated by many years of practical experience to be highly efficient and entirely satisfactory. Length over all, 24 feet.

Greatest width over all (over saw mandrel): Nos. 7 and 8, 64 inches; No. 10, 70 inches. Width of Nos. 7 and 8 between guides, 36 inches; of No. 10, 42 inches.

Shipping weight of Nos. 7 and 8, 2,800 pounds; of No. 10, 3,200 pounds.

(Note.—In all but width and weight the No. 10 is an exact duplicate of the No. 8.)

These edgers are regularly provided with three saws, of which one is stationary and two are independently movable.

The position of the stationary saw can be changed by merely loosening a set screw.

While, as stated, three saws are the regular complement, one of the saws can be omitted, if desired, or, on the other hand, the number of STATIONARY saws can be increased. These changes of course affect the price.

Speed, 1,500 to 1,700 revolutions per minute.

The Tables.—Each table is ten feet long, accurately joined and securely bolted throughout.

The Feed Rolls.—The feed rolls are so fluted as to be most effective without defacing the lumber. They are adjustable in four directions.

The Table Rolls.—The table rolls are of wrought iron, with steel journals.

The Feed Pulleys.—Diameter of feed pulleys, 19½ inches; face 4 inches.

The Driving Pulley.—Diameter of driving pulley, 12 inches; face, 10 inches.

The Saws.—The saws are 16 inches in diameter by 9 gauge.

The Saw Collars.—The saw collars are strong, are accurately fitted and have long bearings. **The Saw Mandrel.**—The saw mandrel is of cold rolled steel. It is 2 7-16 inches in diameter. A steel feather key extends throughout its entire length.

Shifting the Saws.—The saws are shifted by means of strong levers, conveniently located, fully protected from the dust, and so arranged as to provide against lost motion and consequent inaccuracy.

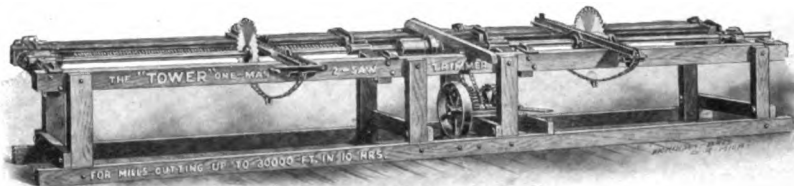
Removing the Saws.—The construction of this Edger is such that the saws may be removed with the utmost ease and expedition.

If you wish an Edger, please answer the following questions:

1. Do you want Edger No. 7, 8 or 10?
2. As you stand in front of Edger, facing it, do you want the driving pulley on the right or the left?
3. Standing as above, do you wish the stationary saw to be on the right or the left? (It is almost invariably put on the same side as the driving pulley.)
4. To the guide nearest the stationary saw a 2-inch or a 4-inch wing is hinged, which is turned up or down to increase or decrease the distance to the stationary saw. Which width do you prefer?
5. How much space do you wish between the stationary saw and the guide (not the WING) on the table? (NOTE.—As the tight collar is secured by means of a set screw, its position on the arbor can readily be changed.)
6. What is the capacity of your mill in ten hours?
7. Do you cut hard or soft wood?

THE "TOWER" ONE-MAN TWO-SAW TRIMMER

These Trimmers are pre-eminently practical. They have everything that is essential and nothing that is Superfluous. This, our exceptional facilities, and the vast number of them we turn out, are what enable us to make such extremely low prices.



No. 16	Length over all, 18 feet; width over all, 5½ feet.	Trims from 6 to 16 feet.	\$165 00
No. 18	Length over all, 20 feet; width over all, 5½ feet.	Trims from 6 to 18 feet.	178 00
No. 20	Length over all, 22 feet; width over all, 5½ feet.	Trims from 6 to 20 feet.	187 00
No. 22	Length over all, 24 feet; width over all, 5½ feet.	Trims from 6 to 22 feet.	198 00
No. 24	Length over all, 26 feet; width over all, 5½ feet.	Trims from 6 to 24 feet.	209 00

These are the regular sizes, but we can make any length desired. Shipping weight, 2000

This is, without exception, the simplest and easiest trimmer to operate on the market. It will do more work in a given time than any similar trimmer made, and that with less fatigue to the operator. With it one man can easily trim the output of a mill cutting up to 30,000 feet in ten hours.

The Adjustment Crank being attached to one of the transfer blocks, the operator shifts the saws as he walks toward the board to be trimmed, thus performing two operations simultaneously. This saves considerable time. The crank can be attached to either block.

The saws are shifted through the medium of a double rack and pinion—one in front (not shown in the accompanying illustration) and one in the rear—which insures extreme positiveness. There are two feeds—one thirty feet per minute, the other fifty.

The feed can be started, stopped or changed without stopping the saws. One lever controls both feeds.

The feed works are composed of gears. This makes the feed positive.

The saws travel in unison, in opposite directions. Each complete revolution of the adjustment crank increases or decreases the distance between them exactly two feet.

This Trimmer can be placed in a very narrow space, the width over all of the standard machine being only 5½ feet. Both the arbor and the feed shaft are of ample size and are coupled in the center with accurately fitted flange couplings.

The transfer blocks are built up from steel angles and have babbitted bearings in the center, which support the arbor and the saw while the saw is at work. These blocks are so constructed that the board is supported as close to the saw as possible, which insures a clean cut. The saw collars have 7½ inches bearing on the arbor. They are provided with steel keys.

The driving pulley may be in the center or at either end. If in the center, a pulley 6 inches in diameter is used; if on one end, a pulley 8 inches in diameter. Both pulleys have an 8-inch face. The saws are 18 inches in diameter by 10 gauge.

Speed.—The Trimmer should run 2,000 revolutions per minute.

If you wish a Trimmer, please answer the following questions:

1. Do you want Trimmer No. 16, 18, 20 or 22?
2. What is the capacity of your mill in ten hours?
3. What kind of timber will you cut?
4. How thick lumber do you wish to trim?
5. Will the operator stand at the right or left hand end of Trimmer?
6. Do you want the driving pulley in the center or on one end? (If the Trimmer is to be belted from below, the pulley can be in the center; if from above, it must be on one end. Owing to the fact that only a 6-inch pulley can be used if in the center, as per description on other side, it is earnestly recommended that we be permitted to put the pulley on one end wherever possible.)
7. If the driving pulley is to be on one end, do you wish it to be on the right or left end, as you stand in front of the Trimmer, facing it? (If possible, it should be on the end opposite that at which the operator is to work.)

REMEMBER.

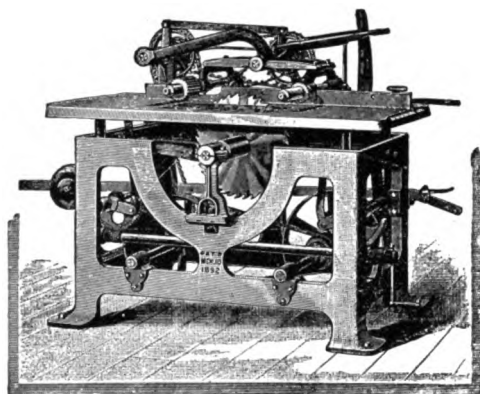
1. That trimmed lumber commands a better price than untrimmed.
2. That a trimmer also saves freight by removing waste.
3. That a trimmer increases the quantity as well as improving the quality of the output. Thus it very soon pays for itself.

In ordering be sure and answer questions above.

No. 209. Hoosier Self Feed Rip Saw, 2200 lbs. \$175

This machine can be used as a single rip saw or side edger; or it can be used as a gang rip saw, or it will rip bevel siding. This saw will rip from $\frac{1}{4}$ to 6 inches thick and as wide as $17\frac{1}{4}$ inches. Any number of saws can be put on the mandrel, so as to rip any desired width.

We are selling the Self-Feed Rip Saw for sawing barrel hoops, crate material and dimension material of all kinds, and especially for getting out hickory wagon and buggy material. The machine has every possible adjustment for the quick and rapid handling of dimension material.



**No. 209 Hoosier Self-Feed Rip Saw, 2,200 Lbs.
\$175.**

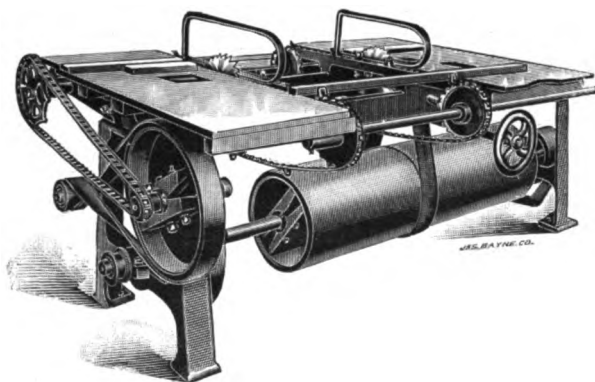
DESCRIPTION.

The "Hoosier" Patent Self-Feed Rip Saw is built strong and heavy; the frame of this machine is cast all in one piece and planed perfectly true. The machine has a square raising table, operated by right and left hand worm wheels and screws; this device is easily operated by a crank at front end of machine, and is always firmly locked at any point, thus preventing the table from slipping down or jarring while the machine is in operation, this arrangement doing away with all clamp bolts and screws. The saw mandrel is made of $1\frac{3}{4}$ -inch diameter steel and runs in two 6 and two 4-inch boxes, babbitted with silver babbitt. The sliding box on end of mandrel is easily and quickly removed for changing saws; the mandrel between the saw collars is $1\frac{3}{8}$ -inch diameter by $8\frac{1}{2}$ inches; this space is filled with collars of different thicknesses, so that a gang of saws can be used for different width stock if desired; driving pulley on mandrel is 8x8. The board gauge is all iron and is operated by a lever and is firmly locked at any point by a lever and screw. The front end of table has a graduated scale for operating board gauge. The machine will rip stock 6 inches thick, and by placing saw on outer end of mandrel will take in stock 17 inches between board gauge and saw. Machine is provided with our patent feeding device, which has become so popular among leading mill and lumbermen in the last few years; it has two feed shafts, one in front and one in rear of saw; front shaft is provided with a thin Star feed wheel, that can be set directly in front of the saw; rear feed shaft is provided with a corrugated roll $5\frac{1}{2}$ inches long (or we can furnish a hard rubber feed roll for planed stock when desired at extra cost); this feed roll carries the material away from the saw without being handled or touched by the operator. This feed is driven from saw mandrel by 2 and $2\frac{1}{2}$ -inch belts and sprocket chain, and the feed can be stopped by a clutch and lever while machine is in motion.

The machine has four different feeds. The first feed is for heavy stock and feeds 35 feet per minute; the second 75 feet; the third 100, and the fourth 130 feet per minute, the saw running 3,000 revolutions per minute.

The machine is provided with a resaw attachment for making bevel siding without extra cost. Floor space occupied by the "Hoosier" Self-Feed Rip Saw is 50x54 inches. The height of table is $31\frac{1}{2}$ inches from the floor when down to the lowest point. The table can be raised 6 inches. Countershaft is provided with 10x8 tight and loose pulleys; the drive pulley is 20x8; speed of countershaft should be 1,200, so as to run the saw 3,000. Machine complete, with countershaft, weighs 2,200 pounds.

Lawson Patent Cut-Off Saw.



**New Endless Feed, Double or Single.
Cut-Off Saw Machine.**

ONE MAN CAN DO THE WORK OF FIFTEEN MEN.

**Cuts off both ends of forty pieces per minute. Can be
set instantly to any length.**

Perfect Equalizer or Cut-Off Saw.—Cuts off as fast as any man or boy can feed, and delivers the stock in an even pile, easy to gather.

One man can cut more in one day with this machine than fifteen men by any other method, or one man can do the work of fifteen men. It is fifteen times as fast as any other method. For long lumber the operator stands at the end of the machine and pushes the board up to the gauge set beyond the saw the length of board wanted and gets two boards every two seconds—one outside the saw and one between the saws—this makes 60 cuts each minute. He can handle two boards, one on top of the other, and double the product. If stock is less than 6 inches wide he can handle four boards and get a product of 240 boards every minute.

IT WILL SAVE ITS COST EVERY MONTH.

Used in all factories cutting off staves, chair stock, box boards, table stock, furniture lumber, shingle packing or slabs, novelty pieces, long boards, short boards, or any other kind of cutting, one or both ends square or bevel.

It will saw slabs as easily as lumber or staves.

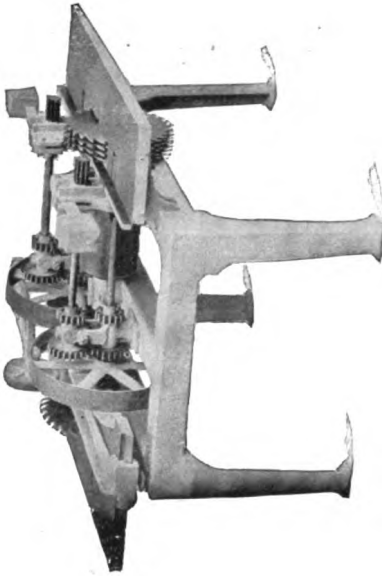
It cuts stock 3 to 12 inches wide, $\frac{1}{4}$ to 1 inch thick.

This is the only Saw Machine of the kind on the market. **It is covered with ten patents and any infringement will be prosecuted.**

	Price.
No. 2—Equalizes 7 in. to 60 in.....	\$180.00
No. 3—Equalizes 7 in. to 72 in.....	190.00

Weight, 1,000 pounds. Speed Countershaft, 700. T. & L. Pulley, 12x6. Machine complete, ready to run except belts and saws. Saws should be 12 in. or 14 in. Speed should be regulated for stock it is desired to cut. Advise us in ordering of the nature of stock it is intended to cut.

Lath and Bolter Mills, Binders, Trimmers, Etc.



Iron Frame Lath, Picket and Bolter Machine.

Weight, 1,375 lbs. Price, 3 Saws, \$150. 4 Saws, \$165.

Saw Arbor	11-16" diameter	Drive Pulley	8" diameter, 8 1/2" face
Feed Shaft	1" diameter	Feed Pulley	50" diameter, 3" face
Feed Shaft	3" diameter	Fly Wheel	16" diameter, 2" face
Saw Collars	Lath 4" diameter	Bolter Table	31 1/2" long, 18" wide
	Bolter 4" diameter		

Lath Table 48" long, 12" wide.

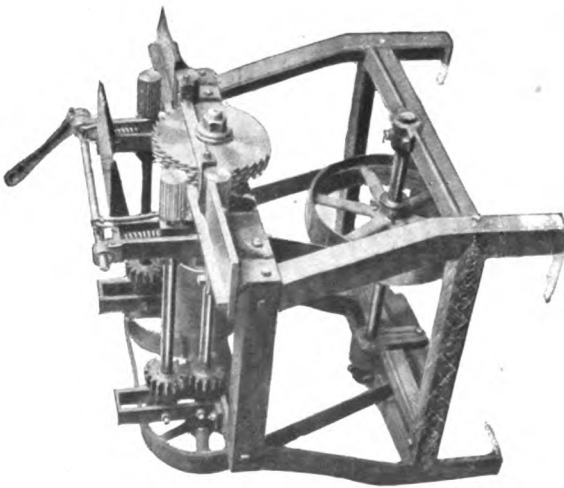
Machine carries four 14" lath or picket saws and one 16" bolter saw. Has power feed on both sides. Feed rolls are corrugated and adjustable for stock from 3/4" to 3" in thickness. Adjustable lumber gauge on both sides. The bolter gauge slides on planed ways and is set with a single hand screw. It is always parallel to saw line.

A roller is provided on bolter side to prevent the return of cut portion.

One set of collars, either for lath or pickets, and one set of solid tooth saws, furnished with each machine.

This machine is very heavy and will stand an enormous amount of wear. It is built of the best material and workmanship.

Should run at 2,200 revolutions.



Iron Frame Three or Four Saw Lath Machine.

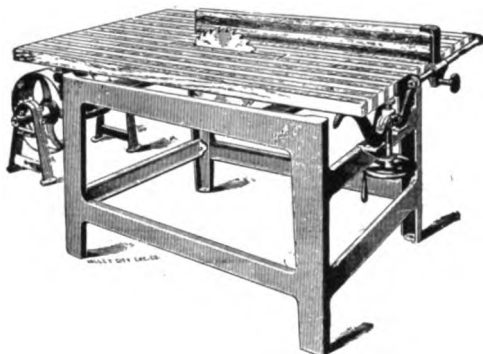
Having had numerous calls for a first class cheap lath mill, we have designed an Iron Frame Lath Machine, cut of which is shown on this page, to fill that particular want. It has a very heavy iron frame and is constructed throughout of the very best material, the arbors and shafts all being of a high grade machinery steel.

The arbor is a 2 ft. 6 in. long, 1 1/2 in. in diameter, having a drive pulley 8 in. in diameter, 9 in. face. It has adjustable self-feed, which can be handled by operator by means of a lever shown at top of machine. The machine will carry either three or four saws, and will cut as much if not more than any other similar machine in the market.

We guarantee this machine to be first class and to do its work well and rapidly. It is simple, compact and complete.

No. 324A—3-Saw Lath Mill, 715 lbs., Price \$100.00
No. 324B—4-Saw Lath Mill, 750 lbs., " 110.00
No. 324C—Combined Iron Frame Lath Mill and Bolter " 175.00

(Latter Machine not illustrated.)

B. T. & B. NEW DESIGN RIP SAW TABLE**Used for all Kinds of Ripping**No. 286 Saw Table with top 36 inches wide by 4½ feet long,
Heavy Iron FrameWith Counter Shaft
\$55 00Without
\$45 00

Used For All Kinds of Ripping.

For Cut Off Attachment add \$7.50 to above prices.

If 16 inch Saw is required add \$2.75 to above prices.

The frame is made of the best quality of cast iron. The Table consists of narrow glued up strips of hardwood thoroughly seasoned and the cross pieces fastened below are cast iron, well ribbed to prevent any working of the table.

The Mandrel is made of machinery steel, and revolves in extra long bearings.

The New design Fence and device for raising and lowering the table are quick and accurate adjustments.

Tight and loose pulleys are 5x8 inches and should make 700 revolutions per minute. With this machine a 16 inch Saw is used.

NO. 5 B. C. DRAG SAW MACHINE

Weight, 1,650 lbs.

Speed, 150 to 200 Revolutions

Price, \$110 00

NO. 3 B. C. DRAG SAW MACHINE

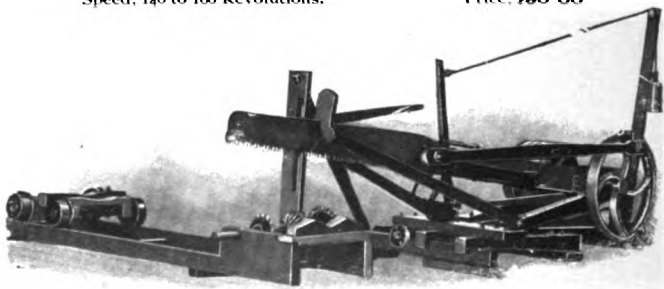
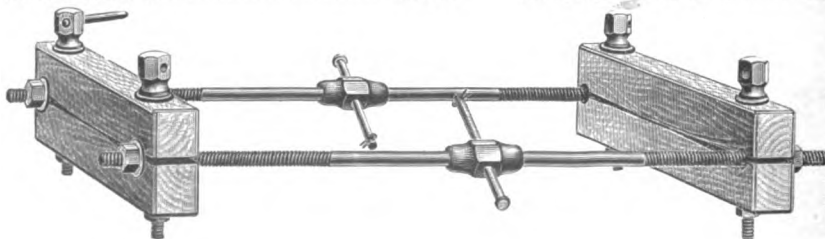
Weight, 1,400 lbs.

Speed, 140 to 160 Revolutions.

Price, \$90 00

The No. 5 is designed for cutting stove wood, staves, heading and shingle bolts. They are a complete self-feed machine, built extra strong for heavy work: can be placed in the mill or woods and relied upon for handling and sawing the largest class of logs. The tight and loose pulleys are 24 inch diameter, 6 inch face.

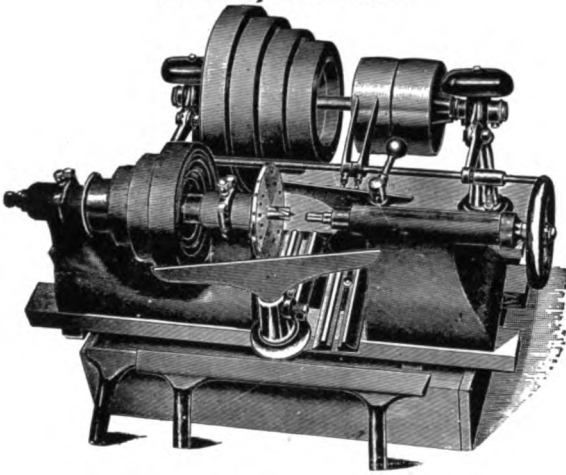
The No. 3 is calculated to be driven by 8 to 10 horse steam power and is designed for cutting stave, heading and shingle bolts. It has heavy oak frame, large shaft and balance wheel, 26 inch stroke, and is the best all around low priced machine in the market.

**IMPROVED IRON SCREW BELT CLAMP**For 6 to 14 inch Belts \$8 00
For 18 to 24 inch Belts 12 00For 12 to 18 inch Belts \$10 00
For 24 to 36 inch Belts 18 00

This clamp has corrugated and beveled jaws which insure strong gripping. Frame is of rock maple and

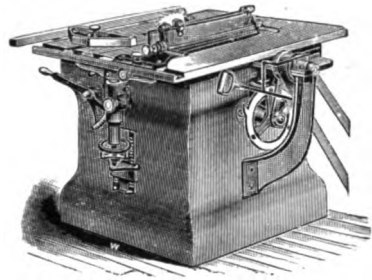
the screws of the best wrought iron with square head and rapid pitch. They are the best belt clamps made and no one can afford to do without them.

New Improved Lathe,

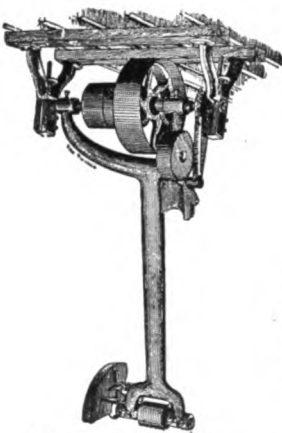


12, 14, 16, 18 and 20 inch sizes for Woodworkers.
16, 18, 20 and 24 inch sizes for Pattern Makers.

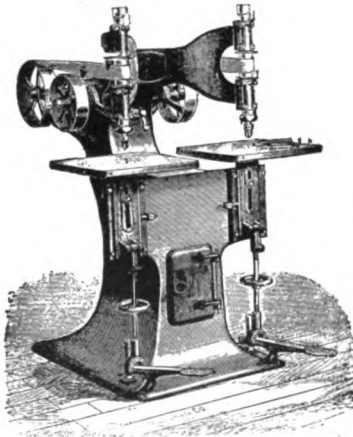
These cuts are merely illustrative. If wanting any such machines write us for descriptive circular and price list.



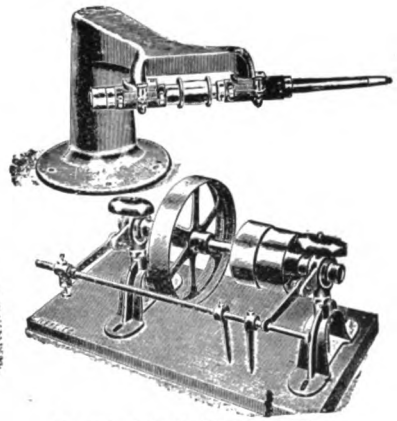
No. 211. Universal Sawing Machine
1,050 lbs.



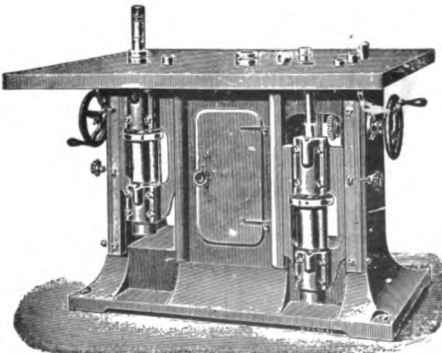
No. 213. 80 or 92 inch saw.



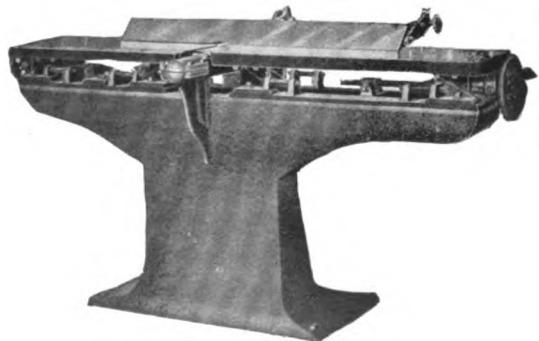
No. 217. Rounding or Boring Machine,
1,300 to 1,500 lbs.



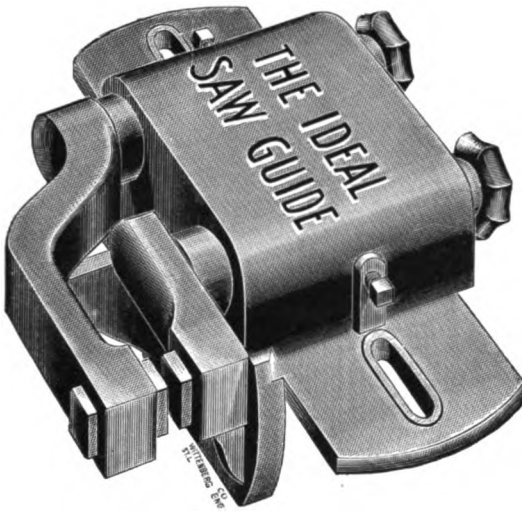
No. 216. Spindle Carver. 150 lbs.



No. 220. Improved Column Shaper.
1,550 lbs.



Hand Planers and Jointers in 8, 12, 16, 20, 24 and 30 inch sizes;
2 or 4 sided head.
The quantity and quality of work done with these Jointers
cannot be surpassed. Cut shows 16-inch Hand Jointer.

**THE IDEAL SAW GUIDE No. 142**

Weight, 80 lbs. Price, \$10 00.

This guide is designed to meet the requirements of millmen needing a heavy, practical and safe saw guide. It is adjustable and reversible. The adjustments are made by turning the hand wheels, by which either jaw can be adjusted independent of the other.

The jaws are turned and fit into parallel bored bearings, causing the adjustments to be made in direct line, the guide pins presenting a parallel surface to the saw at all times.

The clearance between the jaws is large and ample for the discharge of all sawdust.

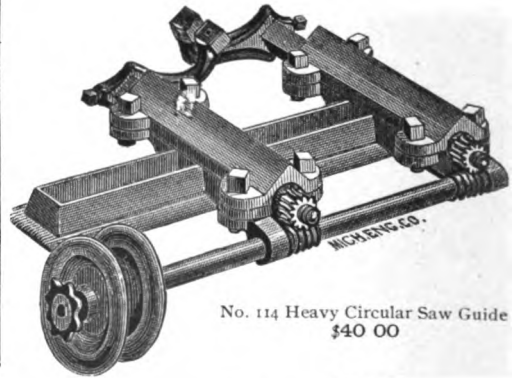
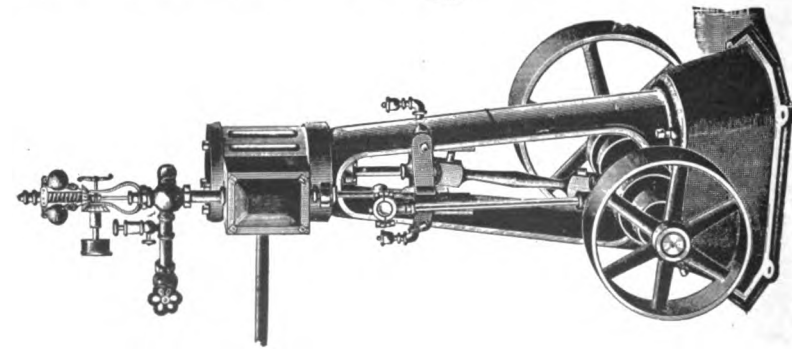
The adjustments are all made without danger to the operator while the saw is in motion, and are accomplished by moving the jaws with the hand wheels, and not by changing the guide pins as with guides having solid jaws.

Being reversible the Ideal Guide can be used on a right or left hand mill by chang-

ing and reversing the jaws and either jaw can be turned back to permit the removal of the saw from the arbor without displacing the guide.

The Ideal Guide is made heavy in every part so that it will be solid and substantial. It is built in the best possible manner, and we will guarantee it to give perfect satisfaction.

With order give hand of mill, position of sawyer, distance from center of slot to saw, diameter of saws, and distance from center of arbor to outside of roller stand when standing in rear of saw and to end of saw husk when standing in front and height of guides from saw husk to top of guides.

No. 114 Heavy Circular Saw Guide
\$40 00**High-Grade Engines For Filing Room Power**High-Grade Engines For Filing Room Power
(Two to Fifteen Horse Power)

It is indispensable to the best results in filing saws, that the speed at which the filing room machinery is run, shall be uniform. It is also frequently of great advantage to the filer to have power when the mill proper is not in motion. For these reasons the matter of equipping the filing room with a small engine suitable to drive the saw filing machines is an important one. The cost of a suitable engine for this purpose is small and the convenience to the filer, together with the improved results in saw filing, leads progressive millmen to provide this power.

Our engines are of new design, thoroughly built and of the best materials. Every point that could add to their durability has been carefully considered. We have a large number in use in various parts of the country with the best possible results. They are made with plain governor (automatic governor extra price) perfectly reliable and for service are equal to any in the market. With each engine we furnish governor, pulley, governor belt, oil cups, throttle valve, cylinder lubricator, belt wheel and balance wheel, complete and ready for starting.

Horse Power	Diameter of Flywheel	Length of Stroke	Diameter of Belt Pulley	Face of Pulley	Diameter of Flywheel	Face Fly Wheel	Revolutions	Height to Top of Governor	Weight	Price
1 1/2	10	8	10	10	10	10	325	10	350	\$100
2	12	10	12	12	12	12	325	10	400	125
3	14	12	14	14	14	14	325	10	450	150
4	16	14	16	16	16	16	325	10	500	175
5	18	16	18	18	18	18	325	10	550	200
6	20	18	20	20	20	20	325	10	600	225
7	22	20	22	22	22	22	325	10	650	250
8	24	22	24	24	24	24	325	10	700	275
9	26	24	26	26	26	26	325	10	750	300
10	28	26	28	28	28	28	325	10	800	325
11	30	28	30	30	30	30	325	10	850	350
12	32	30	32	32	32	32	325	10	900	375
13	34	32	34	34	34	34	325	10	950	400
14	36	34	36	36	36	36	325	10	1000	425
15	38	36	38	38	38	38	325	10	1050	450

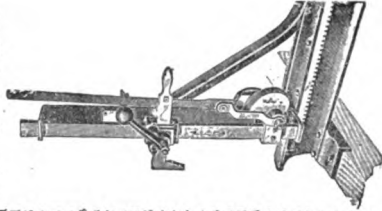
Dimensions of Engines and Prices.

Saw Mill Dogs in Any Style

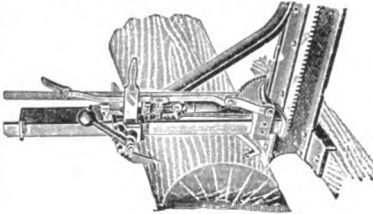
Hand or Size quoted on request. Give Hand of Mill and Specify Block for which Dog is Wanted

Knight's Ideal Duplex Dog.

THE MAIN FRAME, or guide bar, stands in an upright position, and is bolted to the head block knee; the main beam at right angles to the guide bar. The SLIDE BAR, in any way, in the guide bar, and carries the slide head, dog bit and operating levers. The slide head is adjustable vertically on the slide bar to suit the requirements of different size logs. The dog bit is carried by the slide head and is adjustable horizontally. The screw lever locks the adjustments of the slide head and dog bit at any point of the slide bar. In any position of the lever, the dog may be adjusted to look at any point of the log. THE OPERATING LEVER, placed between the slide bar, and by it the dog bit is forced into, or released from the timber, at the will of the operator. THE LOWER DOG BIT is located between the guide and the main beam, and is actuated by the power lever. It is self-adjustable, no action of the operator being necessary to bring it in proper position to hold the log. THE RACKET HANDLE, attached to the operating lever, releases the lower dog bit; a continued movement of the lever adjusts the dog bit, and simultaneously with this the dog bit is forced into the timber, both bits being locked by the engagement of the racket with the quadrant. When released from the timber the dog bit is automatically locked between the upright bars and remains there, out of the way, until liberated by the operator.



Knight's Ideal Single Dog.



Knight's Ideal Duplex Dog.

KNIGHT'S IDEAL SINGLE DOG

THE AUTOMATIC LOCKING LEVER is a new device that we have had in use, in connection with our single dog, for the past two years, and find it superior to any arrangement we have ever seen, for the purpose intended.

It is necessary, in any mill, to have a dog necessary, to fit them to the different makes of mills, as they can be bolted to the knee of any mill. The dog is made of hand and left hand. For a right hand mill a right hand dog is used on the front head block, and a left hand dog on the rear block. On a left hand mill a left hand dog is used on the front head block, and a right hand dog on the rear block. Both dogs shown in cut are right hand.

DESIGNS FOR FASTENING THE DOG TO THE HEAD BLOCK KNEE

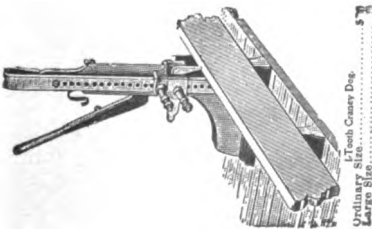
Bolt the dog to the side of the knee as shown in cut, with the bottom of the main guide bar as near the top of the head block as the construction of the knee will permit, and far enough back so that the lower dog will not project beyond the face of the knee when the lever is up in proper place.

The Knight New Ideal Single and Duplex Saw Mill Dogs.

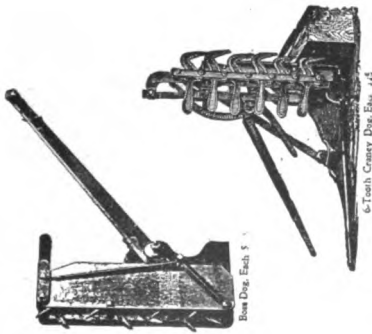
size	thousands in use.	Latest Improved Design.
No. 1 For Small Mills, per pair.....	10,000	
No. 2 For Medium Mills, per pair.....	20,000	
No. 3 For Large Mills, per pair.....	40,000	
No. 4 Extra Heavy, for Largest Size Modern Mills.....	125,000	

Specifications No. 3 Duplex—Cast slide head 4-in.; slide bar, 3 1/2-in. high; dog bit, 2 1/2-in.; weight, 225 lbs.
Specifications No. 3 Special Duplex—Steel slide head, 4-in.; slide bar, 3 1/2-in.; dog bit, 2 1/2-in.; weight, 250 lbs.
Specifications No. 4 Duplex—Steel slide head, 4-in.; slide bar, 3 1/2-in.; dog bit, 2 1/2-in.; weight, 275 lbs.

Grand Rapids, Mich., U. S. A.



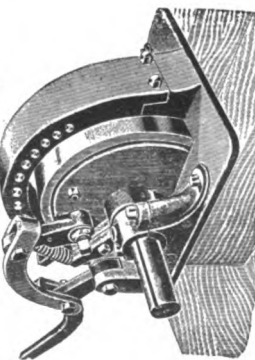
17-Ton Capacity Dog.



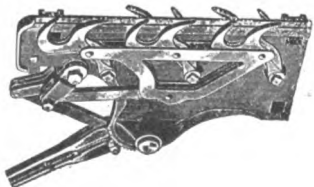
6-Ton Capacity Dog.



225-Pound Capacity Dog.



543-Pound Capacity Dog.



Release Dog.

A BAND SAW LEVELING AND TENSIONING OUTFIT.

A band saw outfit for leveling and tensioning should comprise a saw stretcher, three or four wall brackets, four or five floor rolls, an anvil, an iron leveling block, a dog-head and cross-face hammer of suitable weight for the gauges of saws in use (some also use a twist-face hammer), a back gauge from 4 to 10 feet long, either straight or preferably concaved to suit the crown carried on back of saw, and a set of straight edges and tension gauges in lengths to suit the widths of saws in use.

The above tools are without exception articles that are essential to any properly equipped filing room and should be furnished by the operator of the mill. In addition there are a number of small tools that every filer ought to have at hand, and if not furnished by his employer, he ought to personally own them. Among these may be mentioned a wire gauge, speed indicator, emery wheeldresser, upset swage, sawset, sawset gauge, file side-dresser, jointer, etc. Some filers furnish their own hammers, straight edges and tension gauges, or even the swage and swage shaper, preferring to own their own tools, or have them at hand for use in case of possible need, though the filing room is fully equipped with everything of the sort. Every filing room ought to be provided with a locker, in which all small tools may be kept securely when not required for use by the man in charge, and the use of the filing room and its contents as a tool room by every one around the plant should be prohibited.

TENSION GAUGES AND BACK GAUGES.

All saw filers need tension gauges for the purpose of securing a more uniform tension than is likely to result from the application of straight edge and the eye test, and while the degree of the tension employed by different filers on different saws must necessarily be variable, there are some general truths that may serve as guides to those after information.

For log band saws ranging from 8 to 14 inches wide, the tension gauges are ground variously on segments of circles ranging from 32 to 51 feet diameter, but the segments that suit the majority of filers are of circles about 38 to 42 feet diameter, the gauge being usually made from 14-gauge tempered steel.

For band saws ranging 4 to 8 inches wide the degree of the tension is usually somewhat more than for log bands, say segments of circles from 32 to 38 feet diameter. As manufacturers of tension gauges it is a matter of indifference on what segment we grind, and we very much prefer to be instructed on what segment to furnish gauges, if customer can instruct. In the absence of specific instructions we furnish gauges according to length on true segments such as are commonly employed. Some filers carry their tension practically from edge to edge of saw; others carry a strip of saw one inch wide, more or less, on the toothed edge and a strip one-half inch wide, more or less, on the back edge, these strips serving as a sort of tire for the saw. Some filers employ several gauges, varying in length to suit the different widths of saws or the gradual wear. Thus for a 12-inch an 11-inch gauge will be used, and when the saw wears to 11½ inches a 10½-inch gauge will be used, the tire carried on narrower saws being relatively less than on wider ones. These variations in methods indicate the individual experience of men constantly watchful of results.

We furnish straight edges any length from 4 to 72 inch, made from 14-gauge polished band saw steel, combination straight edge and tension gauges 4 to 14 inches long, combination convex and concave tension gauges 4 to 14 inches long, all on segments as ordered; back gauges with edge straight or concaved to order, 4, 5 or 6 feet long, in 14-gauge polished band saw steel, or in lengths from 4 to 10 feet from 3-16-inch spring steel, 2½ inches wide, the longer back gauges being furnished with handles, if so desired. If you run some crown in back edge of saw, as, for example, from 1-64 to 1-32 inch in from 5 to 6 feet, the use of a concave back gauge to suit your requirement will afford better satisfaction, in that it will enable you to work out the back more uniformly than will result from the use of a straight back gauge.

DOUBLE BACK GAUGES.

One of the most desirable types of back gauges that we manufacture is made of spring steel, with one edge straight, the other edge concaved to order. These are made in 4 to 10 foot lengths, and besides serving to secure the proper and uniform expansion of the back of saw, the straight edge side of gauge will prove highly useful for other purposes. We undertake to meet satisfactorily any clearly defined requirements for gauges that are submitted to us.

Averaging the practice of saw filers, it may be said that band saws of the following widths can be run successfully tensioned to the segments of circles of the following diameters: 4 or 5 inch saws to from 30 to 34 feet, 6 inch saws to from 32 to 36 feet, 8 inch saws to from 34 to 38 feet, 10 inch saws to from 38 to 42 feet, 12 inch saws to from 40 to 44 feet, 14 inch saws to from 42 to 46 feet.

THE LEVELING BLOCK.

The leveling block is preferably of iron, surfaced both sides, in size to suit the saws in use. For narrow or medium width band resaws we supply blocks that are either 6x48x3 or 8x48x3 inches. For log bands the block may be 10, 12 or 14 inches wide, 48, 60 or 72 inches long, and 3, 4, 5 or 6 inches thick as preferred; however, the blocks measuring 12x48 or 60-inch face and 3 inches thick, are in greatest demand. As the constant hammering on an iron surface tends to make it convex, it is desirable that leveling blocks shall be occasionally turned end for end and also turned over.

We will quote iron leveling blocks to any specifications, have a variety of patterns, and can meet any requirement quite promptly.

ANVILS.

Steel faced anvils are the most desirable for any kind of saw hammering, for the face is one solid piece of best cast steel of uniform hard temper, perfectly welded, and warranted never to settle or change from a true surface. We also furnish anvils with face chilled and ground. These are less expensive in the log band sizes, than the genuine steel faces, and meet with same sale, giving fair satisfaction, but for hard and long usage the steel faced anvil is preferable.

We furnish anvils in many different sizes, but the sizes in general demand are made with face variously 5x8, 6x10, 8x12, 10x12, 12x14 or 12x16.

HAMMERS.

There are five different types of hammers employed in saw work, known variously as the doghead, cross-face, twist-face, combination and swaging, the first four for hammering purposes, the fifth used with a swage bar. For practical purposes the doghead and cross-face hammers are sufficient, the twist-face and combination being in little demand. The doghead is used for tensioning. The cross-face and twist-face for leveling the saw, that is, for removing lumps, bends, twists or similar distortions of the plate. The combination is made with a doghead on one end and a pene running with the handle on the other end. The doghead is also known as the round-face hammer. We will make to order hammers in any desired shape or weight, if a wood model is furnished with order. Our hammers are all finely shaped and polished, mounted with handle, and will be nickel plated and etched or stamped with the owner's name when so required, and furnished in any desired weight from 1 to 10 pounds.

Hammers should be bought with special regard to their weight and shape of face, both of which have much to do with their fitness for work. Hammers have both a use and an abuse. Heavy hammers, such as are commonly used for circular saws from 5 to 8 gauge, are too heavy for bands or band resaws. Indeed the regular band saw hammers are considered by careful filers too heavy for fine work on band saws, and many use light finishing hammers weighing not over two pounds or so, and find their use much more satisfactory. Especially is this the case where filers have a good stretcher for their work in tensioning. In such case there is very little leveling to do after the rolling, and the light hammers accomplish the work best.

We recommend as follows:

Circular Hammers—Weight mounted, from 3 to 5 pounds.

Band or Gang Hammers—Weight mounted, 2 to 3 pounds.

Light Finishing Hammers—Weight mounted, from 2 to 2½ pounds.

Band Resaw Hammers—Weight mounted, from 2 to 2½ pounds.

A filing room may better be equipped with sets of hammers in several weights, the cost of these being inconsiderable, than for the saws to be abused by the use of unduly heavy hammers, with which the work of hammering may degenerate into a mere "pounding" or marking of the saws. This is particularly true in woodworking plants, where band resaws or thin circulars are employed, and where it sometimes happens that the filers are men who are either beginners or are at least not sufficiently far enough along in the art to be classed as amateurs.

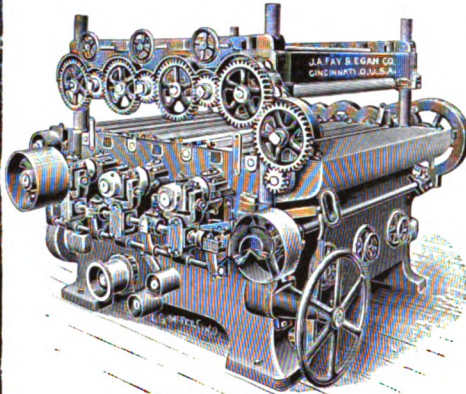
All of the above is in direction of making it possible to level and hammer saws with the least liability of marking or denting them, and at the same time of having them perfectly leveled, tensioned and expanded on the back edge. The filer who does not look closely to all of these details is not the best filer, nor is he the filer who has the interests of his employer in mind, because the utmost care in the above details tends not only to make it possible to run saws with much less liability to crack, but also makes it possible to run them on a lighter swage, or, in other words, a lighter kerf, and to make smoother lumber and more of it.

Erection of Saw Stretcher and Hammering Bench

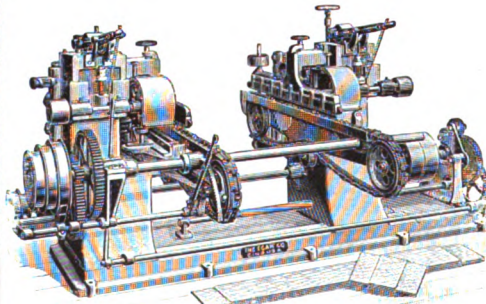
The saw hammering bench should be built at one side of the filing room and placed preferably to secure a north or east light on the end of bench faced when testing the saw. Bench should be, for band resaws, from 8 to 10 ft. long, for log band saws, from 14 to 16 ft. long. A very convenient addition to the bench for use when saw is on the upper brackets above the bench to permit of working the inside of saw, consists of a pair of drop leaves at each end of bench, hinged to the wall or studding, to permit of being raised up or

(Continued on Page 190)

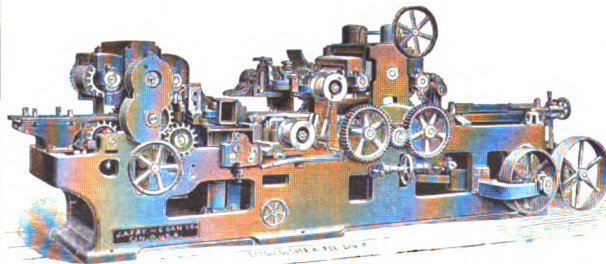
WOOD WORKING MACHINERY



No. 4 Patent Triple Drum, Eight Roll Sander



No. 10 New Patent Double Tenoner

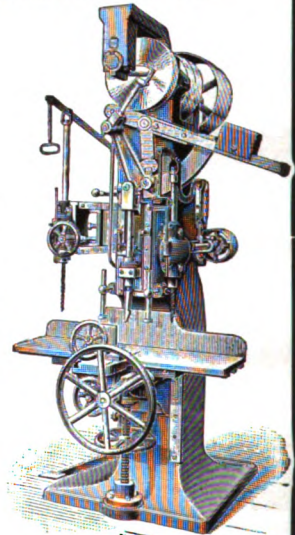


No. 106 New Style Patent "Lighting" Floorer

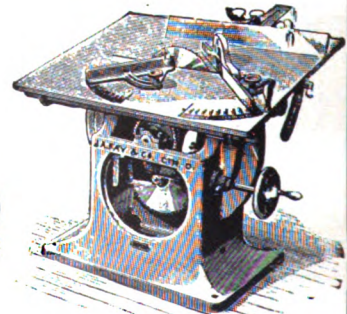
Machinery in single tools or complete equipments, smallest to largest sizes, for the smallest blacksmith and wheelwright shop to the largest car shop and shipyard. Machinery in use all over the world by governments, corporations and individuals. Largest firm making this machinery in the world, and have been making it seventy-five years. Our machines are built for speed, economy and efficiency, and each is fully guaranteed to do its respective work in the very best possible manner. Your inquiries most cordially invited. If not interested now write any way and ask for our new catalogue so as to keep up-to-date with the new and improved tools being finished for your work.

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No. 69 Large Patent Car Mortiser and Borer



New Improved Revolving Double Circular Saw

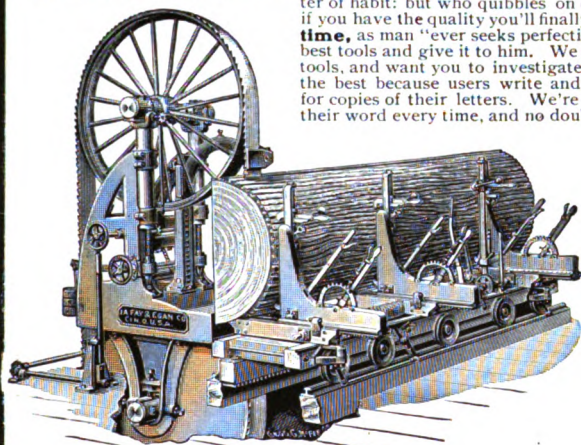
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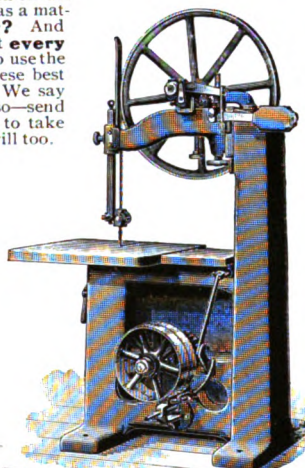
J. A. FAY & EGAN CO.,

To stand the pace use up-to-date tools: Success or failure depends much on the machine—so get the best. Your customer may quibble on price—we all do, as a matter of habit; but who quibbles on **quality?** And if you have the quality you'll finally win out **every time**, as man "ever seeks perfection." So use the best tools and give it to him. We make these best tools, and want you to investigate them. We say the best because users investigate and tell us so—send for copies of their letters. We're willing to take their word every time, and no doubt you will too.

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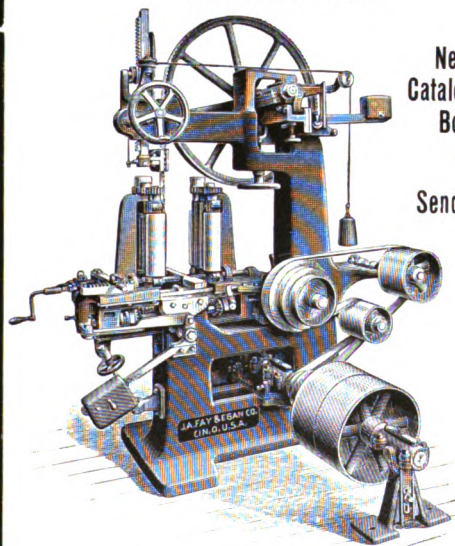


No. 57 Patent Band Mill

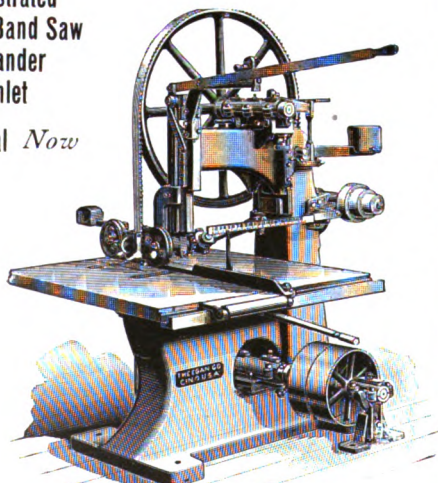


No. 50 Patent Band Scroll Saw

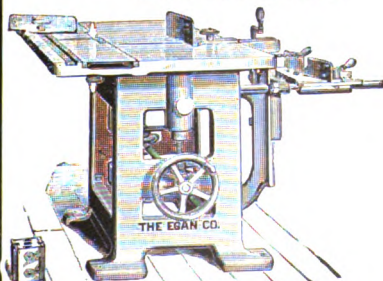
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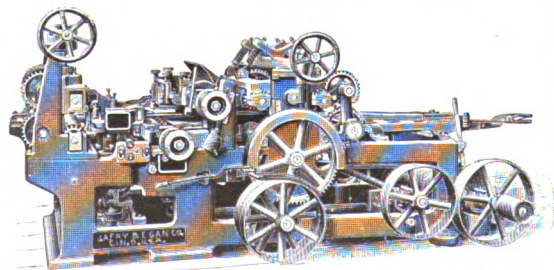
No. 11 Patent Band Resaw



No. 1 Patent Band Rip Saw



No. 76 Universal Rip and Crosscut Saw



No. 129 New Patent Six Roll Double Cylinder Planer and Matcher

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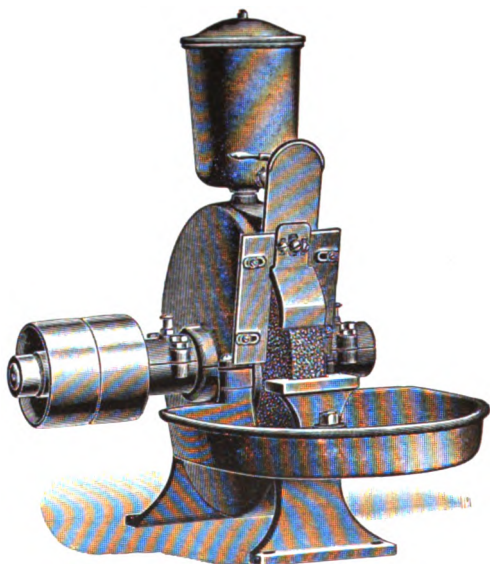
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For Machinist's and
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Bench Room Required, 22 x 16 in.
Size of Wheel, 12 in. diameter, 1 1/2
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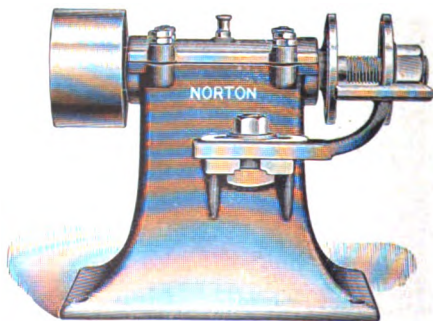
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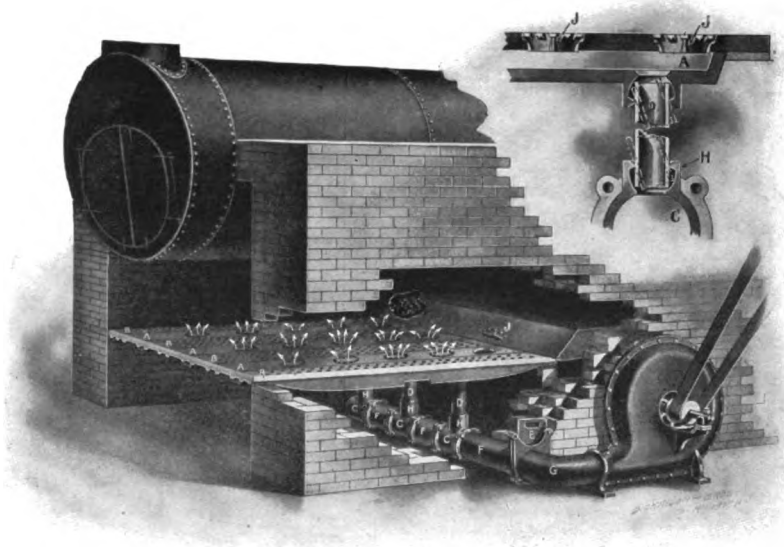
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What does the Gordon Hollow Blast Grate do?

It promotes combustion by fanning the boiler fire, in the same manner as the blacksmith's bellows.

How much does it add to the efficiency of a boiler?

From 20 to 50%.

Will it burn sawdust satisfactorily?

Yes, it gives as good results with wet, green or frozen sawdust as a draft grate gives with dry wood.

Is it only an experiment, or is it a demonstrated success?

It is very far indeed from being an experiment. It has been on the market for sixteen years, and there are 3,000 sets in daily use.

What guarantee has the purchaser that it will do what is claimed for it?

It is sold on approval, 30 days being given in which to thoroughly test it. If unsatisfactory, it may be returned at manufacturer's expense.

What information must be given to secure a quotation?

Give number of boilers, width of furnaces or ovens and length of grates.

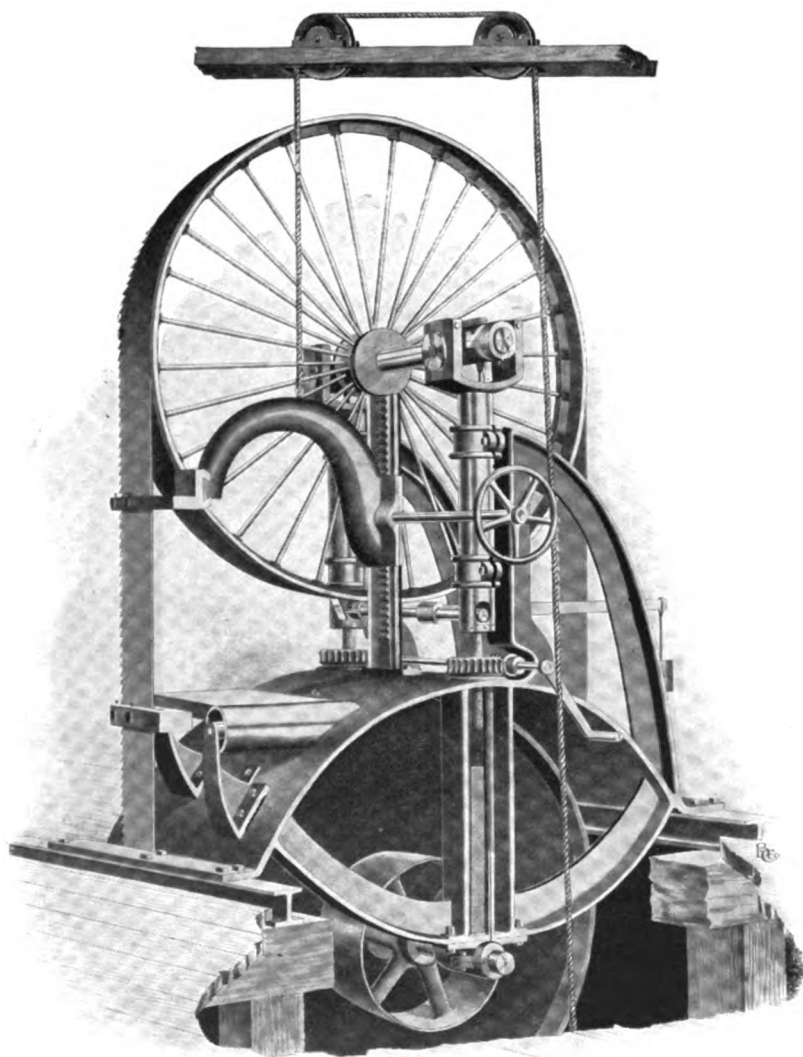
Where is this grate manufactured?

It is manufactured by the Gordon Hollow Blast Grate Co., Greenville, Michigan.

The largest manufacturer of Blast Grates, Edgers and Trimmers in the world.

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THIS IS A GREAT LITTLE MILL



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It uses saws as thin as 16 gauge which cut a kerf only 3-32 thick.

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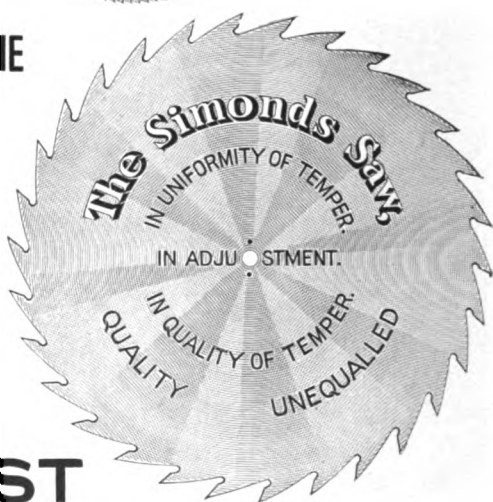


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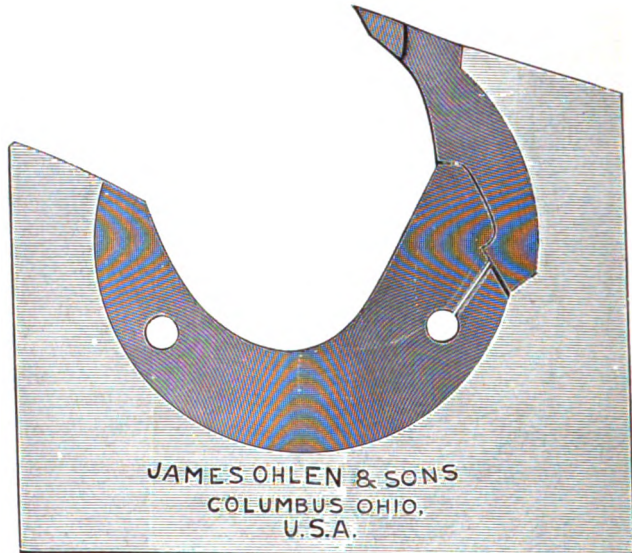
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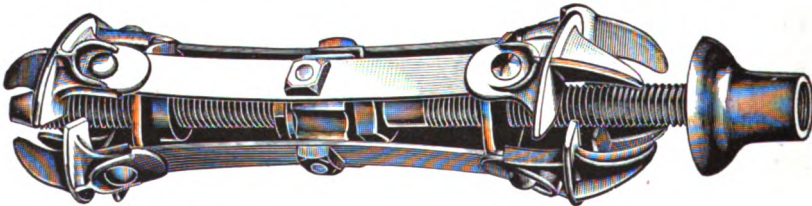


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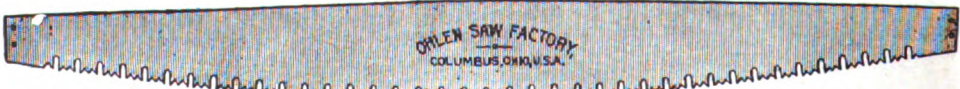


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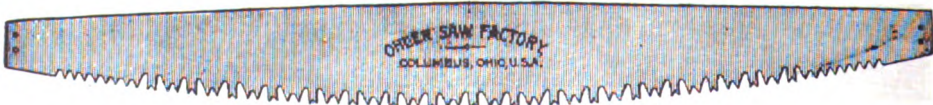
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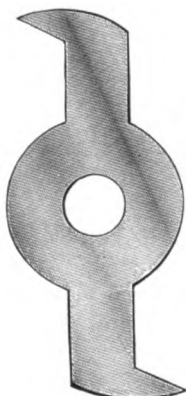
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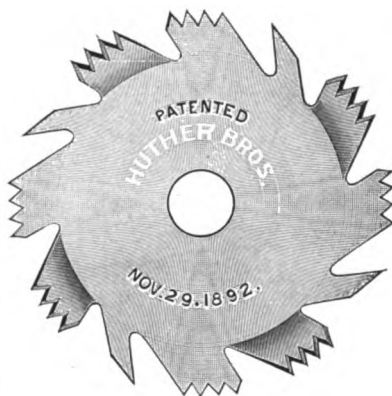
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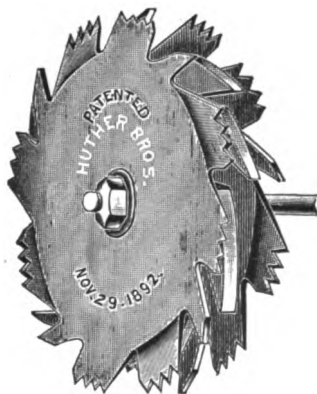
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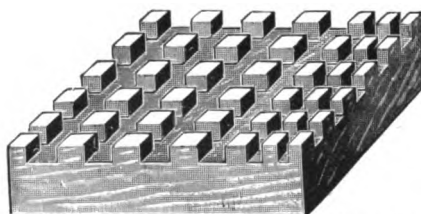
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Can be used on any Circular Saw
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Will cut a perfect groove with or across the grain

For cutting any width groove from $\frac{1}{8}$ in. to 2 in. or over. This groover consists of two outside saws, each of which is a groover in itself, and as many inside cutters as required. The inside cutters are made 1-16, $\frac{1}{8}$ and $\frac{1}{4}$ inch thick, so that any width groove measureable in sixteenths may be cut. The outside cutters are made $\frac{1}{8}$ in. thick.

It will cut a perfect groove, either with or across the grain, and will not leave a rough edge, as is the case with ordinary groovers.

This tool is recommended to any person in need of a perfect Groover, Dado or Gaining Head.

The outside cutters can be used singly, together, or in connection with as many or as few inside cutters as required to cut the necessary width groove.

We will guarantee to sell you the best Dado on the market, and will send on approval to any responsible party, and if not satisfactory in every respect it can be returned at our expense.

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No. 3 " " "	$\frac{1}{8}$, $\frac{1}{4}$, 5-16, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, 9-16, $\frac{5}{8}$, 11-16, $\frac{3}{4}$.
No. 4 " " "	$\frac{1}{8}$, $\frac{1}{4}$, 5-16, $\frac{3}{8}$, 7-16, $\frac{1}{2}$, 9-16, $\frac{5}{8}$, 11-16, $\frac{3}{4}$, 13-16, $\frac{7}{8}$, 15-16, 1.
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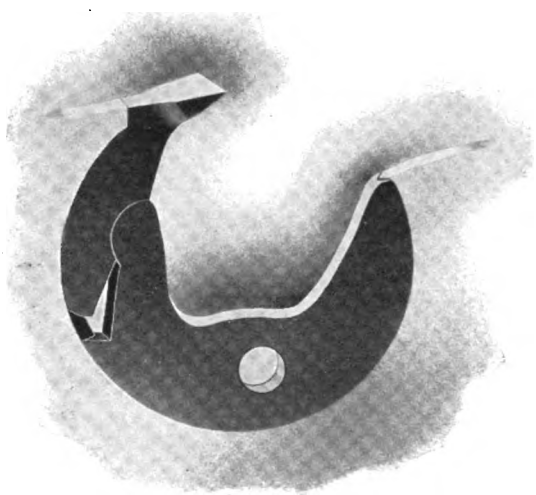
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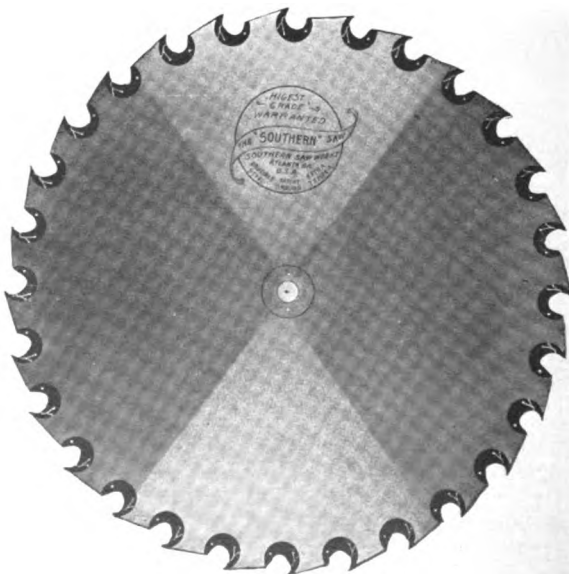
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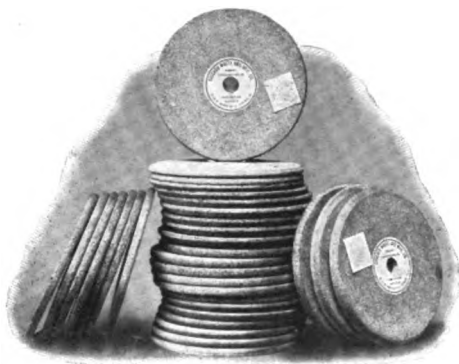
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The "bond" we use has got some "give" and "stretch"—has elasticity and resiliency - and that makes such a difference.

The "Chicago" is a good gummer because:

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- 2 It leaves a smooth edge. Many filers don't use a file at all after this wheel.
- 3 It wears well. Many mills tell us we save them more than half of their Emery Wheel bills.
- 4 It don't heat. It is not made with the old style harsh mineral bond.
- 5 It don't break. It is elastic and strong.
- 6 It cuts quick. None but the best abrasive used in it.

We've got some special Saw Gumming literature you ought to have. It may help to convince you. If it don't the wheel will. Which shall we send you.

FOR BAND SAW GUMMING, with the dish shaped wheel you get clear down under the hook of the tooth without grinding away the point. You used to do that with the old style concave wheel, too, but our new style wheel with the same thickness throughout gives you teeth of uniform shape and size always, where with the old style concave wheel which always got thinner toward the center, the shape of the teeth was always changing.

Isn't it worth considering? Hundreds of Band Saw Filers use it. There is no extra charge for this special shape.

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WE MAKE PRETTY GOOD WHEELS FOR KNIFE GRINDING, TOO

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Ask your friends—some of them use our goods Or better yet, ask us for our 136 page Catalog of Grinding Machinery. Wheels, etc.

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Emery and Corundum Wheels

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THEY HOLD THEIR SHAPE.
DON'T HEAT OR BURN.

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or

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They are made of the very highest grade of Emery and Corundum obtainable and no expense is spared to produce wheels combining every essential point necessary to a perfect Saw wheel.

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Corundum is surpassed only by the diamond in hardness, and is much superior to all other abrasives. Every grain cuts rather than rubs. Hence Corundum Wheels neither glaze, burn or injure the temper of fine edge tools. Not a particle of foreign matter enters into the manufacture of our Corundum Wheels.

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"ABRASIVE"

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—WHEELS—
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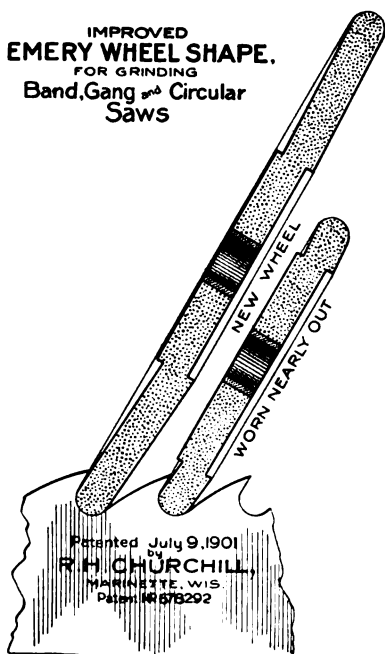
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IMPROVED
EMERY WHEEL SHAPE.
FOR GRINDING
Band, Gang and Circular
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Patent No. 678,292

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Patented Concavo-Convex
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IF NOT, TRY THEM.
YOU ARE MISSING A
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For Grinding all kinds of Saws. But especially
Adapted to Band and Gang Saws.

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Write for descriptive circulars, or send
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OVER ONE HUNDRED FIRMS NOW USING THEM

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without face dressing until worn out,
thus being a saving in wheels and labor
and the throat of saw teeth are always
kept uniform in shape. The price is
the same as for regular straight faced
wheels. A stock of Norton wheels,
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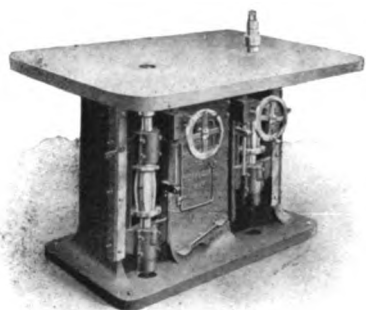
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AUTOMATIC CIRCLE KNIFE GRINDER

On or before November 1, 1904, we will place on the market
a new Automatic Grinder designed for properly grinding
either straight or circle knives, on front or back edge as
required.

HOOP AND STAVE KNIFE

Operators have greatly needed such a machine and all per-
sons interested in a machine having the adaptation described
above may obtain cut, description and price by addressing
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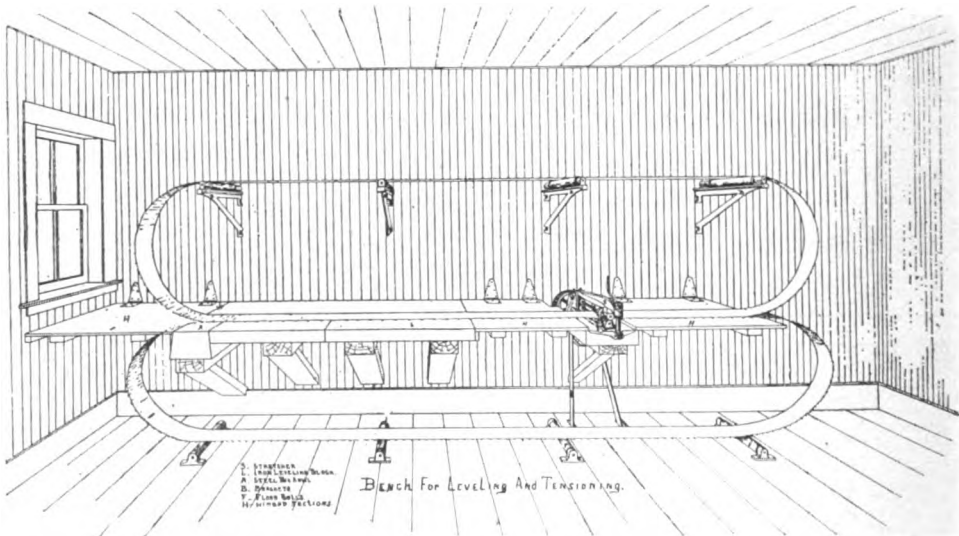
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GRAND RAPIDS,
MICH

dropped down to lengthen out the bench as occasion may require. These may have a leg or support, hinged to the outer edge of under side, to drop down out of the way when the shelf is not in use. The bench may be erected with the stretcher placed near the right or left hand end, with anvil and leveling block in proper relative position. Avoid placing the stretcher so that there will be opportunity for an abrupt bend of saw downward, as this may cause the rolls to dish the saw. The saw must lie flat on bench as it feeds through the rolls in process of tensioning. Next to stretcher there may be a portable or hinged section in bench such that it can be lifted out when testing tension. This opening permits of bending the saw down or of testing it by its sag, which is less laborious than lifting it off the bench. The manner of testing for "fast" and "loose" in a band saw blade is about the same as in a circular saw. The blade is sprung up or down under the straight edge, which should be of the same, or greater, length, as the width of the blade and held straight across the blade. Taking hold of the blade, a portion is raised and tested in the sag in front. The open places drop away from the straight edge and the fast places come up to it. If the edges of the saw are longer than the body of the blade they will drop down away from the straight edge, and if shorter the body of the blade will drop away or show open. A three-corner block from 4 to 14 inches long and 4 inches across the corners may also be used to spring or crown the saw in this straight edge test, only in such test the action is reversed, as the loose comes up and the fast comes down. This latter test is really important, as the band is likely to have dished spots or bends across the blade, which would deceive the unskilled filer if only the lifting test is used.

Next to the open space referred to above should be placed a leveling block 4 feet long of proper width to suit the saw, and at the end of this should be the anvil, three or more brackets placed equidistant, about three feet above the bench, supporting idle rollers of wood, or a set of our special brackets above bench, and another set mounted on the floor, are requisite for the convenient handling of the saw over and under the bench.

The top of the stretcher roll should be about three feet above the floor, and if no portable section is built in the bench the leveling block may be placed close up to the stretcher, with the surface of board about one-eighth of an inch below the face of the rolls and the anvil on the same level next to the leveling board. The rolls should not



be allowed to run when not in use, as any unnecessary rubbing against the surface of the saw will tend to wear and impair their face. The face of the rolls and the machine should be kept oiled.

The etching illustrates one plan for the erection of the saw hammering bench and the location of the stretcher, anvil, leveling block, etc. There is nothing arbitrary regarding the relative location of the stretcher or of the anvil and leveling block with respect thereto, and in some filing rooms an opposite arrangement is followed. The relative position of the tools will depend upon whether the filer works right or left handed, and, referring to the etching, some filers would wish the window at opposite end of bench. It is perhaps advisable to have a window at each end, each provided with a dark curtain, so that one can face either direction, as may be most convenient.

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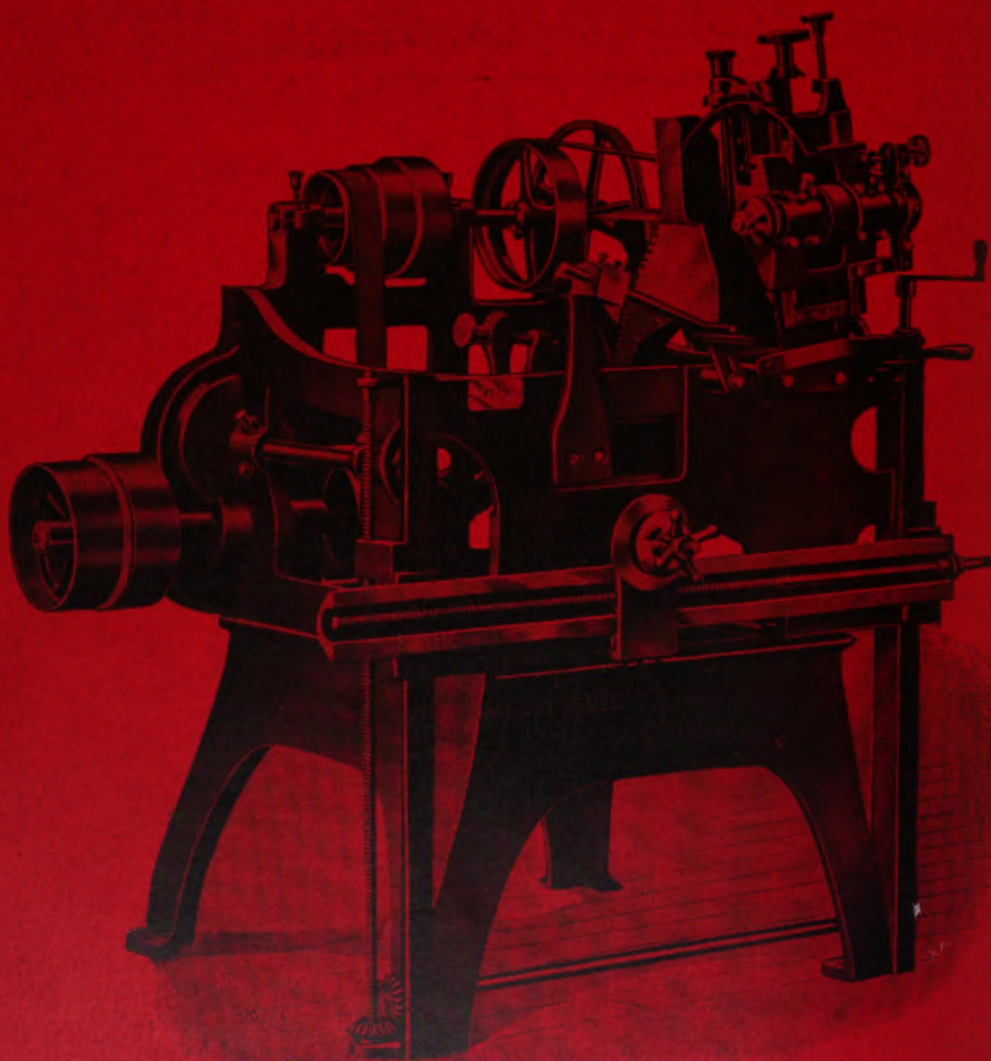
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